The Builder.

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The Local Government Board Report—1902-1903.

THIS large volume, which covers a year down to the spring of the present year, contains an immense mass of information which throws light on the condition of the people at the present time. It would be impossible and out of place to touch on all the points contained in this book, but there are portions of it of considerable suggestiveness to readers of this journal.

It is satisfactory, in the first place, to note that during the year 1903 the Local Government Board sanctioned loans by urban and rural authorities to the amount of nearly two millions less than in 1901, the figures being for 1901 13 millions odd, for 1902 11 millions odd, which compare with 4 millions odd in 1892. This latter comparison must take away some of the satisfaction felt at the sight of the two first sets of figures. The last year's loans, when we bear in mind that they must be added to the borrowings of local bodies since 1871, indicate the great burden which is being continually placed on the country, since the interest and sinking fund on these loans have to be found by the taxpayer. On the other hand, some parts of these loans are in respect of reproductive undertakings; for money spent on, for example, waterworks and gasworks, repays itself by what it produces in payment by consumers. But when we recollect that no less than 110 millions were expended by local authorities in the year 1900-1901, and that of this sum 16 millions or 15.3 per cent. was devoted to the repayment of borrowed money or interest, we may well feel that great caution should be exercised by local authorities in sanctioning new works. As the requirements of society grow from year to year, and population increases, expenditure by local authorities is inevitable, but such expenditure must be made bearing in mind that every increase of the indebtedness of localities is, so to say, so much of the strength of the country taken from national to local purposes. Yet again we have to remember that the rateable and assessable value of the country is constantly on the increase. The assessable value of all boroughs in 1897-98 amounted to 51 millions, and in 1900-01 it had risen to 58 millions. Thus the problem for those who are in charge of the affairs and the finances of local districts is to keep the right proportion between increasing assessable values and increasing expenditure. For as soon as the latter grows out of portion to the former the country is spending too much money.

It is impossible, as we have already said, to do more than refer to a few points in this important volume, and these are necessarily fragmentary, since the subjects of the report are so diverse. A good deal of attention at the present time is being given to the subject of highways, and it may be useful, therefore, to glance for a moment at the finance of our highways.

It appears that on March 31, 1902, there were 27,115 miles of main roads in England, of which 16,202 were repaired by County Councils, the remainder being handed over to District Councils to repair on behalf of the County Councils. This is a weak place in the administration of our highways, for every main road ought to be repaired by the Council of the county in which it is situated, for we are confident that the 3,597 miles of main roads in rural districts would be in a better condition if actually maintained by County Councils. Be that, however, as it may, we find that the County Councils have expended for the year ending March 31, 1902, 1,077,695*l.*, and that they have also contributed to Urban District Councils 729,585*l.*, and to Rural Councils 454,639*l.* The average cost of repair of the roads maintained by County Councils was 67*l.* per mile. As regards the cost of roads prepared by District Councils which are not main roads many of these are of considerable local importance, and the total mileage of the non-main roads—that is, the roads maintained by Rural District Councils—was 95,205, and their cost, otherwise than out of borrowed money, was 1,969,540*l.*, which represents an expenditure per mile of 20*l.* 14*s.* This figure, when compared with the cost per mile of main roads, shows clearly enough why District Councils are unwilling to transfer their jurisdiction to the County Council, because they spend less on their roads than do the County Councils. It would also be very desirable if statistics were given of the staffs, their pay, and their character; by which we mean the training which the paid surveyors have received before being put in charge of an area of highways. For every highway surveyor should be properly qualified technically, whereas unquestionably many surveyors are simply amateurs. No one who is placed in charge of a section of highways can execute his duties properly unless by reason of a proper technical training he is able to appreciate the value of contour, drainage, material, etc. Many of our English roads are in their present bad condition simply because many surveyors are, as we have said, amateurs, and so the ratepayers' money is wasted because the management of the highways is not in the hands of competent men.

Turning to another point, we are glad to note a considerable number of loans to Rural District Councils for water supply and sewerage purposes. There is a great deal to be done in this respect, but we think we here note a tendency to greater energy, and it is certain that nothing will tend more to the general improvement of our rural districts in regard to these matters than the force of example. Some of the sums borrowed are curiously small. Pontardawe, Glamorganshire, for example, borrowed 340*l.* for a new water supply, and St. Neots 400*l.* for the same purpose. These facts show, however, how easily,

and at what a small cost, the health of many localities might be improved if those in authority would realise the special importance of a pure supply of water. We must conclude by again referring to the bulk of this report, which should be issued in two or three smaller volumes, each dealing with separate and distinct subjects which are comprised in the report.

FLOOD PREVENTION IN THE THAMES VALLEY.

YEAR after year many parts of the Thames Valley are flooded with monotonous regularity. Roads are rendered impassable, communication between neighbouring towns is cut off, houses are flooded, large areas of cultivated land are injured, and business is seriously affected. The disastrous flood now subsiding has caused more distress than is generally known, and it is only one of three similar visitations during the present year. The most extraordinary thing in connexion with these periodical inundations is that no public authority has ever suggested the advisability of works intended to prevent their recurrence. As several counties are affected, it may be that no one body would be competent to carry out the necessary works, but it should not be difficult for a working arrangement to be devised among the various County Councils in the basin of the Thames.

In the present day the Thames is practically an artificial river. It has been embanked more or less from its source to the sea; the extensive marshes and lagoons once covering large areas along its course, and occupying much of the present site of London, have been drained and reclaimed; and above Teddington the river is essentially a canal. These alterations have had the effect of deepening the channel, so that it is sufficient to carry the average flow of water, but by no means adequate to deal with exceptional volumes in times of flood. Not the slightest attempt has been made to provide escapes for flood waters in the manner familiar to all irrigation engineers, and this strange oversight is a serious blot on the reputation of a people whose engineers have carried out some of the most noted hydraulic engineering works in the world.

If we turn to the pages of history, we find that the nations of old were far wiser in their generation than we are, perhaps because their government was in the hands of men having complete authority, instead of being split up into hosts of petty councils, unwilling to take concerted action, and unable to act alone in the promotion of any extensive scheme. When one bank of the Nile was reclaimed some 4,500 years ago, the engineers of King Menes constructed a longitudinal dyke parallel to the river, and tied by cross-dykes to the Lybian Hills. Into the basins so formed the waters of the flood were led by canals. Five hundred years later the resolve was made to reclaim the other bank of the Nile, and thus to confine the river to its own channel. This task was a difficult one, and required the exercise of great engineering skill. If the river had been suddenly confined, the low-lying towns of Memphis and others in Lower Egypt would have been exposed to disastrous inundations, just as are the low-lying towns of the Thames Valley in the time of flood. But the kings of the Twelfth Dynasty were not troubled with local authorities. They simply commissioned competent engineers to carry out the required works, and left things in their hands. Consequently the reclamation of the Nile was accompanied with all precautionary works necessary for the protection of the land and other property. The engineers of the great Pharaohs widened and deepened the channel leading to the natural depression, known as the Fayûm, in the Lybian Hills, thus providing an escape for the flood waters. These were led into the depression when the flood was dangerously high, and were returned to the Nile after the waters had subsided. The artificial sheet of water so made was called Lake Mœris, and was for many years one of the greatest wonders of the ancient world. The inlet and outlet channels were controlled by earthen dams, the prototypes of our modern flood gates, and these were only cut for the entry or exit of the water at such times as were ordained by the river engineers.

The early Egyptians may have worked with primitive tools and in primitive methods, but they did something that has not hitherto been done in the Thames Valley—they worked with their brains.

Inhabitants along the course of the Thames are now asking the question whether some means of protection against flood cannot be devised by our civil engineers, who have done so much in India and in Egypt. The answer is already written in the ancient records of Egypt from which we have quoted. There is no Fayûm depression into which surplus waters can be turned, but many low-lying areas exist that could be turned into escape reservoirs at comparatively small cost. The surplus water so collected might be returned to the river in times of drought, or made the basis for additional supplies for London and other centres of population.

A proposal recently made in the correspondence columns of *Engineering* is to cut a canal connecting the Thames near Reading with Southampton Water, so as to relieve the river in the very centre of its course, and give it a second channel to the sea. It is suggested that a water-course of this kind might or might not be so constructed as to be also a means of navigation and a route for commerce. Doubtless it would be quite feasible to construct a canal between the two points mentioned, but in order to provide an efficient escape, the flood waters should be able to flow by gravitation along its entire course, and with sufficient velocity to ensure adequate relief. Unfortunately the long range of the North Downs is interposed between the Thames Valley and the South Coast, and although there is a good fall from the hills to the sea, the first part of the proposed canal would have to be raised, step by step, through locks.

Without a careful survey it would be impossible to settle definitely the details, or even the general outline, of a scheme for the prevention of floods in the Thames Valley, but that a scheme of the kind could be devised and successfully realised is an absolute certainty. We have plenty of engineers competent for the work, and the only thing wanted is a combination of the authorities concerned and a decision that the task shall be undertaken.

NOTES.

The Claims of Archæology.

DR. GRENFELL'S brilliant and eloquent address at the meeting of the Egypt Exploration Fund last week dealt to a considerable extent with subjects which are beyond our province, referring rather to philological archæology than to art and architecture. But his closing remarks, on the importance of archæological study in Egypt, that storehouse of ancient documents, and the manner in which it had been neglected by England during her recent predominance in Egypt, should not be allowed to pass without a word of special emphasis. Dr. Grenfell made an indignant and only too well-merited criticism on the ignorance and indifference of the English Government, and of average English people, as to the claims of historical and archæological study. The Governments of other countries encouraged their archæologists both with sympathy and money; the Government of England cared for nothing but the interests of Egyptian bond-holders; and Dr. Grenfell pointed out the splendid example, often forgotten now, which was set by Napoléon in his Egyptian campaign, when, not content with seeking merely military and political success, he took with him all the most learned archæologists and scholars he could muster, to carry on archæological research concurrently with the fighting. The campaign was not a success in a military sense, but the devoted labours of the *savants*, with the sympathy and encouragement of their young chieftain (Napoléon was only 29 years old at that date), laid the foundation of Egyptian archæology. It is an example worth quoting and worth remembering, though we fear the lesson falls on deaf ears when addressed either to English politicians or to English society. We observe that a leading daily paper, which gave the rest of Dr. Grenfell's address nearly *verbatim*, omitted all mention of his eloquent peroration. To English journalists and their public this kind of enthusiasm is but as sounding brass or a tinkling cymbal.

Radium and the Sun.

IN the light of modern discoveries, we are no longer justified in accepting some conclusions based upon theories hitherto held with regard to the origin of the sun's heat. The calculations made years ago by Lord Kelvin and other scientists, as to the possible length of time during which the sun could maintain its present energy of heat radiation, must be set aside. It has been calculated that 3.6 grammes of radium per cubic metre of the sun's volume would be sufficient to supply the entire output of the sun's energy, and, further, the suggestion has been made that at the temperature of the sun, radium may be much more energetic than at normal terrestrial temperature. This is pure conjecture, but if true, a much smaller percentage of radium would suffice. Even if radium does not exist in the sun in sufficient quantity to account for the heat radiated, it is quite conceivable that other elements present may be possessed of similar radio-active properties. Knowing the enormous amount of energy that can be contained in an atom of matter, we cannot assert that the sun is incapable of liberating atomic energy to an extent comparable with that liberated

from an equal volume of radium. Modern science has progressed far enough to unsettle our belief in many theories, but hitherto without furnishing adequate substitutes.

Erosion on the East Coast.

FURTHER attention to the subject of the inroads of the sea on the East Coast is being given by the authorities of the various towns and districts in Norfolk. During the past six months the aspect of things in the vicinity of Lowestoft has become still more serious. At Kirkley a recent storm has wrought great havoc at a fresh point, and at Lowestoft the sea-wall has been broken up or undermined by the waves. The proposal is to protect this wall by piling, but little progress appears to have been made with the work. Some comparatively new groynes have certainly proved useful, as during the last few months less injury has been caused to the cliffs which they serve to protect, and negative evidence as to the value of groyning is to be found in the fact that no groynes exist in front of the damaged sea-wall. It is highly probable that the fresh inruptions mentioned above are due to some change in the position of the sands out at sea. The investigations of Mr. Allanson-Winn clearly prove that changes are taking place in the bed of the sea at various points near the coast line of Great Britain, owing to tidal action. In other words, it seems that erosion is not confined to the earth which is above water-level, and that those who undertake the protection of the land have to fight an invisible as well as a visible foe. At a conference held on Saturday last in Norwich Captain Frederick, of the Board of Trade, stated that he could not pledge the Department to any action, but a resolution was passed requesting the appointment of a Government engineer to report upon the general question of coast protection in Norfolk and Suffolk. No doubt a report would be very useful, but whether the Government will feel justified in applying funds derived from all parts of the country for the relief of one particular district is quite another matter.

The Pollution of Rivers.

A DEPUTATION from Yorkshire, which was received recently by the President of the Local Government Board, raised a very important question affecting the well-being of a large population. The chief object of the deputation was to ask the Government to introduce a Sewage Pollution Bill on the lines of the recommendations made in the Report of the Royal Commission, with the amendment that a charge should be made on manufacturers who polluted the rivers. Upon the main point raised there is no doubt that legislation is required. The natural character of many rivers has been changed by the admission of sewage, and some have become little better than open sewers. This being so, it is unfortunate that Mr. Long was unable to hold out any hope that a Government measure would be immediately introduced. With regard to the demand that a universal charge should be made upon manufacturers, it should be observed that practical difficulties exist of such a character that the Royal Commission felt unable to make a recommendation of the kind. The position of the manufacturer under the Rivers Pollution Prevention Acts is already one entitling him to some sympathy. He is compelled to expend a considerable amount of money in the installation and maintenance of purification plant; he derives no appreciable benefit from his outlay by being able to turn to the river for part of his water supply, or in other ways, and is beset with difficulties which, without scientific aid, he cannot overcome. In many cases, firms in the same district, besides being heavy ratepayers, each pay more for dealing with effluents than the whole community pays for the treatment of sewage. Under such circumstances there is no apparent justification for placing further burdens on industry.

The Savoy Lift Accident.

AFTER the publication of our recent "Note" on this subject, the announcement was made that one of the injured men died in the Charing Cross Hospital, and on Monday last the Coroner's jury came to the conclusion that the death of the unfortunate man occurred through the breaking of the rope; that the rope was not properly examined by qualified persons; and that if it had been so examined twenty-four hours before the accident, it would not have been allowed to be worked. This is a very negative sort of finding; it neither fixes blame upon anyone in particular, nor suggests that the lift ought to have been provided with safety catches for sustaining the cage in the event of the rope breaking. From the evidence given, it appears that the moment the signal to lower was given, the wire rope broke, and the cage fell to the basement, a distance of 63 ft. The rope had only been in use for three months, but as the pulleys were much too small, it rapidly deteriorated, and on the day before the accident, it had fourteen broken wires, so that instead of having a breaking strength of nearly 8 tons, it failed under a load of 9 cwt., in addition to the weight of the cage. The general foreman, the foreman scaffolder, and a crane-driver on the works all knew that the rope was wearing fast, and that some wires were broken, but all of them thought it was quite safe. The injured man shared the same belief, but apparently were not aware that the rope was worn. There was some conflicting evidence as to the use of the lift by workmen. The general foreman said he had never seen any of the men use it, but that, although he had issued notices prohibiting the practice, he had used the lift himself on several occasions—a most injudicious proceeding on his part. The ganger admitted that he had seen the lift used by passengers, and one of the injured men stated that he had ridden in it "hundreds of times, both with and without materials." It is perfectly clear, then, that some of the responsible foremen knew this was virtually a passenger, as well as a goods lift, and some one ought to have seen that the rope was safe. At the same time, as the men were breaking rules by using the lift, the contractors escape from blame. Nevertheless the whole affair is highly unsatisfactory, and shows that legislation is required for regulating the application and use of all lifting machinery, whether intended for passengers or not.

London Street Traffic.

THE police evidence before the Royal Commission on London Street Traffic, given recently, was almost pathetic on the subject of cabs. It appeared that the driver of a crawling cab occupies a position nearly as independent as that of the Sovereign. If he crawls, but does not ply for hire, nothing can touch him. Ladies shopping have to submit to their carriages being sent away by the police to some convenient place as regards the traffic, even when they have no footman to summon them again, but the cabby, as long as he refrains from active politics, that is, as long as he does not solicit orders, can crawl through the streets, blocking the traffic at will, and although the police may order him to trot, it appeared from the evidence it was more than doubtful whether he was compelled to obey the order, except out of complaisance. This obstruction to traffic is at least capable of easy remedy, but none of the witnesses could suggest any remedy for the block occasioned by heavy cross traffic, bridges, or subways offering no solution where such traffic is concerned. It may, however, be anticipated that the increase in the number of convenient thoroughfares which is now being carried out may tend to diminish the inconvenience, as the absence of such roads has hitherto tended to focus the traffic at certain points.

Moving Staircases.

APART from exhibitions and a few large drapery establishments comparatively little use has been made of the contrivance somewhat inappropriately termed the moving "staircase." We learn that a device of this kind is contemplated in connection with the City terminus of the Great Northern and City Railway. Those of our readers who have made frequent use of tube railways know the drawbacks of the lift system. The object of every passenger apparently is to be the last in and the first out. When a train has discharged passengers at any station, no one has the least incentive to hasten his footsteps, because the lift always waits for the last crawling pedestrian before starting on its upward trip. The result is that nobody is in the least hurry and the time necessary for getting to the surface is increased beyond all reason. By adopting the moving staircase, the Great Northern and City Railway will allow busy people to pursue the "strenuous life" without minutes of enforced inactivity, while not interfering with the contemplative progression of those who prefer to saunter through the day. No doubt the company expect some direct pecuniary gain in addition to conferring a benefit upon the travelling public, and there is certainly reason for believing that the cost of attendance should be considerably reduced.

Tenants' Liabilities in Holding Over.

THE case of Harris and Another *v.* Heckman raised an interesting point for landlords and tenants. The defendant had been the lessee of certain premises under a three-years' lease, and under the terms of this lease he was bound to pay "all rates, taxes, assessments, and outgoings." At the expiration of the term granted by the lease he held over his tenancy, thus becoming a tenant from year to year.

Whilst he was thus holding over a notice was served by the sanitary inspector under Section 3 of the Public Health (London) Act, 1891, drawing attention to the existence of a nuisance on the premises, and as he failed to comply with this notice the landlord carried out the work at a cost of 75*l.*, and now sued him to recover this expense. The defence was two-fold; first, that the mere notice by the sanitary inspector under Section 3 did not make the expenses incurred under such compulsion of law as to enable the landlord to recover them from the defendant, as a notice under Section 4, authorised by the sanitary authority, was necessary for such a purpose; and secondly, that the landlord could not sue upon the terms of the lease, as it was inconsistent with the facts that the tenant held on from year to year under all the terms of the lease. The defence was successful on both grounds, on the second point the Court finding the parties could not be reasonably considered in fact to have continued the tenancy only from year to year with a liability on the tenant which exceeded his yearly rent.

The Housing of Roadmen.

A CORRESPONDENT in the *Times* referred recently to a question which is of considerable importance—namely, the housing of the men employed on highways by the local highway authority, whether a county or a district council. At the present time the workmen on the rural roads appear to have to find their own habitations, consequently these may be at a long distance, even in a different county. If the highways are to be properly looked after it is essential that those who work on them should not be mere casual labourers, but men capable of being, as is necessary, left to do their work for a large part of each week without supervision. It is impossible for a highway surveyor or his assistant to be on each length of road throughout the day, and there is consequently no calling in which it is easier for men to shirk their work, whether by pure idling or by getting to and from it either too late or too early. If the workmen in every area of highways were provided with houses there would be an inducement to a better class of labourer to take to this work, and it would bring into the country districts, which are said to be losing their population, a respectable and active community which would be a very useful addition to the rural population.

Scarborough Harbour.

A MOVEMENT has been commenced at Scarborough by the Corporation of the port, and supported by the fishing interest, for the enlargement of the existing harbour, by the construction of a deep sea extension outside the East pier. It is proposed that the area of the extension should be seven-and-a-half acres, with a depth of 14 ft. at low water, the estimated cost being between 250,000*l.* and 300,000*l.* So far, the scheme seems to be in every way worthy of commendation, and one that the local authorities might very properly take in hand. But they have no such intention, and suggest that the North-Eastern Railway Company should be asked to buy the existing harbour, and to carry out the extension works. Why this course should appear right to the Corporation and the Harbour Commissioners we cannot imagine. Scarborough has been a self-governing borough for fully six centuries, and ought to be in a position to provide for its own admitted needs. There is always danger in handing over public works of the kind to a powerful railway company, whose interests may not be identical with those of other people. More than one well-known watering place has been disfigured, if not ruined, by the unnecessarily obtrusive character of railway lines and stations; and it is to be hoped that, in their anxiety to promote local industries, the Corporation will not do anything likely to prove prejudicial to the interests of the town.

Institution of Electrical Engineers.

IN his presidential address to the Institution of Electrical Engineers, last week, Mr. R. K. Gray pointed out how the development of the electrical industry had been hampered in its early stages by inequitable legislation. If, however, we except the Electric Lighting (Clauses) Act of 1899 we find that there has been no legislation upon the generation and distribution of electricity since 1888, when an Act was passed to amend the defects of the original Act of 1882. This absence of legislation has not been a boon to the profession. The question of distributing electricity in bulk is now of pressing importance. It is much more economical in nearly all cases for local authorities to receive electricity in bulk, and then retail it to their consumers, than for them to start generating stations of their own. It is, therefore, desirable that the Electric Lighting Act be amended, so that the municipal area is not the unit area for distribution. Mr. Gray pointed out that the centre of production of electricity tended to gravitate northwards, and that soon nothing but consumers will be left in the metropolis. This was due to the higher cost of raw material, and the higher wages which were paid in the neighbourhood of London. He mentioned that the Institution had acquired a suitable site for a building in Tothill-street, but that in view of the possibility of several kindred societies uniting to erect one large temple of engineering there was no immediate intention of building. Professor Ayrton, in moving a vote of thanks to the president for his interesting address, mentioned that the idea of a temple of engineering had been first proposed by Sir William Siemens, who had offered a donation of 10,000*l.* for this purpose. Nothing, however, had come of this proposal at the time. The Americans had now adopted this suggestion, and such a building was being erected in New York.

All Hallows, Lombard-street.

WE are glad to see that, so far, the proposal to destroy so fine an interior by Wren as that of All Hallows, Lombard-street, has met with a decisive opposition at a meeting of parishioners, held on the 12th inst. It was stated that under the scheme drafted by the Ecclesiastical Commissioners it was proposed to demolish the present church and apply the funds resulting from the sale of the site to the erection of new churches in other parts of the diocese of London. One of these churches was to be named "All Hallows," and the fittings, furniture, bells, and stained glass of the present church were to be used in it. That, however, will not give us Wren's admirable interior, so peculiarly well suited for congregational worship. Two petitions against the demolition were read, one of them signed by the President of the Royal Academy, and a number of other persons well known in connexion with art, science, and literature. On a vote being taken, the bishop's proposals were rejected by 64 votes to 10. What use may be made of churches by Wren where congregations will not attend is a question no doubt to be discussed; but it is quite certain that the worst use you can put them to is to demolish them. If this goes on we shall have a number of the finest monuments of one of the greatest Renaissance architects sold to provide building land—a thing which would be a disgrace to England.

Chippendale Furniture.

THAT the time of a judge and jury should be occupied in a squabble as to whether a set of chairs purchased at a moderate price in a Tottenham Court Road furniture shop were genuine Chippendale work or not, and if not, whether there had been any warranty by the seller to this effect which had been broken, seems rather absurd. But this is what happened last week. In the result the purchaser had the satisfaction of receiving a small sum by way of damages, a sum insufficient to recompense him if he had really been taken in. At the same time if he had obtained genuine Chippendale work for the price he paid, he would obviously have made a good bargain, so that it is difficult to see where he was the loser. The fact is that the jury thought, as we read the report, that the furniture dealer had not been straightforward in the matter, not only as regards the so-called Chippendale chairs, but as to other furniture, and had said more about Chippendale than he should have done, and that for what he had got merely as furniture the buyer had paid too much. It is a pity that those who are in want of furniture should run after names when they are ignorant what they mean. If buyers would endeavour to cultivate their own taste, and seek to obtain furniture which combines utility and simplicity, they would obtain much better articles, have more to show for their money, and at the same time improve the character of furniture generally. If foolish people will ramble about Tottenham Court Road asking for Chippendale chairs, the trade will be certain to manufacture mere imitations of old articles to supply the demand.

New English Art Club.

THE first wall in the new English Art Club Exhibition at the Dudley Gallery contains a good many of those kind of crudities which are to be seen in no other exhibition: "The Market Church, Richmond" (5), an architectural drawing, all out of perpendicular; a "Golden Evening" and an "Autumn Morning" (6 and 14), which are little more than splashes—we overheard the remark that the latter work was "brim-

ming over with mirth" (that is the way people talk at the new English Art Club), so perhaps it is a joke; an ugly smudge of a head dignified by the name of "A Sketch" (22), and "A Gate at Tangier" (23) by a fashionable amateur, who has discovered that to throw a little colour on to the paper anyhow, and call it something, is an art which has its public. Rounding the corner on to the next wall we get into rather happier regions. Mr. Rich's "Storrington Common" (38) is a really fine sketch, though no more than a sketch. Mr. W. Rothenstein's "Mother and Child" (61) has a great deal of character in the figures and in the rather naïve and flat treatment of the accessories; the manner in which the texture of the wood panel over the chimney-piece is differentiated by the use of a thicker pigment and heavy brush-marks is a clever bit of executive tact. The failing of this, and of Mr. Orpen's large interior with portrait groups at the top of the room (94), is that they are not in the true sense *pictures*—i.e., they are not compositions with a unity of purpose; the figures seem put in by accident rather than design. Mr. Ambrose McEvoy's "The Book" (65) shows the difference; this grouping of two figures shows design and *motif*, and not merely surface execution. Mr. James Charles's landscapes are rather bewildering to the eye in their restless spottiness of execution, yet one is reminded that nature too is spotty at times, and the nook in the fields by a plantation, called "Sweet Rest" (66) really gives the kind of impression of multiplicity of growth and of *lætæ segetes*, which one gets in an untouched corner of rural vegetation. Miss Mary McEvoy has realised a very difficult effect in the interior called "Evening Sunlight" (82), a light which really gets into one's eyes. Among other things that stand out in one's recollection are Miss Gardiner's "Lavoir à Chartres" (101), with the old houses yellow in the sunlight; Mr. Furse's fine half-length of "Mrs. M. B. Furse" (107); Mr. Mark Fisher's "An Irish Pastoral" (106); and among things that are astonishing in another sense are Mr. Wilson Steer's "Richmond Castle" (118: is this also "brimming over with mirth"?) and the delightful production entitled by its author, "Study of a Man" (125), in which the object seems to be to show how ugly a head he could produce.

The Leicester Galleries.

A MISCELLANEOUS collection of water-colours, now on view at the Leicester Galleries, in Green Street, Leicester Square, is of quite exceptional interest with regard to the general excellence of the works exhibited. Many of them are not new works, but they are such—as for instance Mrs. Allingham's perfect little picture "An Old Cheshire Cottage"—as one is glad to see at any time. As an example of minute attention to detail without the slightest hardness this is a wonderful work, even down to the indication of the plaiting of the basket carried by the girl (about a quarter-inch square in the picture), and the way the sunlight catches it. But nearly every drawing is worth looking at. Among those which there is some special reason to name are Mr. Wallace Rimington's "An Alpine Garden" (42) and Mrs Albert Stevens's "Michaelmas Daisies" (44), the latter a quite exceptional bit of flower painting. Mrs. Stanhope Forbes has two fine ideal studies of figure and landscape (50 and 54), both called "Autumn," both in what one may call the same key of feeling, but different in colour and detail. Various drawings by Mr. Sutton Palmer show great diversity of power. Mr. Walter Tyndale's "Crockery Market, Rothenburg" (65) is a rather new subject, in which a happy colour effect is supplied by the collections of variously-coloured pottery. Mr. Walter West, one of the latest Associates of the Society of Watercolour Artists, has a charming sketch of a lady, in pencil, touched with colour, under the title "Summer Days" (78). The exhibition includes works by Mr. A. Goodwin, Miss Minnie Smythe, Mr. Spiers, Mrs. Fulleylove, Mr. Orrock, and other well-known artists.

The Montague Fordham Gallery.

THE Directors of this Gallery announce that they have amalgamated with the Artificers' Guild, Limited, a company formed some time since under Mr. Nelson Dawson This company's metal-work business and workshop will continue its work, and henceforward take orders and exhibit at 9, Maddox Street. Mr. Nelson Dawson has founded a school of modern metal work based on the traditional methods of smiths' work, or at least what is left of the tradition. Perhaps no modern craft can benefit so largely from the work of the past as that of the worker in metal. In smiths' work there is still a certain tradition which in other crafts has entirely disappeared, and from the comparative indestructibility of the material there are far more numerous examples of mediæval iron work than of mediæval work in any other material. We should be glad to see a tendency to novelty nipped in the bud. Certain exhibits at the above Gallery show a tendency in that direction. Iron is, to our mind, a material calling for severe lines rather than pretty ones, unless indeed it be cast, when it is capable of great refinement. But prettiness and triviality are special sources of weakness, and the workman should, as far as possible, be left to himself. It is at the present time next to impossible to obtain metal fittings of sound design unless they are mere copies of better times, and this we attribute to the designer on paper. Ironwork is only one of the handicrafts that have been nearly smothered by modern civilisation, but Mr. Nelson Dawson has done such fine work in metal that a continuation of it is greatly to be desired. Jewelry by Mrs. Dawson and Mr. H. Wilson and the lovely pottery made by Messrs. Martin Brothers form part of the present interesting exhibition of English handicrafts.

The Quest Gallery.

A COLLECTION of silver repoussé work is now being exhibited in the Quest Gallery, 172, New Bond Street. The greater part of the exhibits are the work of Mr. Gilbert Marks, who occupies a high place among workers in repoussé metal work; great charm of execution and of design characterise the ornament that adorns the bowls, loving cups, and other pieces. Truthfulness to nature is carried, however, further than is legitimate; while admitting the beauty of the execution, we cannot but feel that a more conventional and decorative treatment is more proper for the material. The form of some of the larger vessels rather emphasises the impression that nature is more studied than the severe lines of design which characterise the best periods of the gold and silversmith's art. Miss Parsons exhibits a number of toilet necessaries, some bowls and vases which recognise the value of form and plain surfaces, though they are rather crude in outline. Of work by other artists the followers of Mr. Gilbert Marks show the best work, some of which is very beautiful, particularly an entrée dish There are besides a number of miniatures by Mr. Charles Sainton, R.I., which, whatever may be thought of the class of subject illustrated, are works of art, showing infinite care and study in their production and finish.

An Exhibition of Embroidery.

THERE is an exhibition of antique embroideries now on view at Messrs. Debenham and Freebody's, in Wigmore-street. It includes some beautiful pieces of needlework, and also some curious examples of old work, not beautiful in themselves, but interesting to the collector. One of the finest pieces of work is a large half circle of blue-green velvet, probably a church vestment, elaborately embroidered in a conventional pattern of flowers and leaves in gold and silks. There are several other church vestments which are very beautiful, one in particular, in thick white silk with a large bold design in raised gold and coloured silks. A child's frock in white silk is very fine both in design and execution, but a white silk waistcoat which is equally well worked is spoilt by the naturalistic design of flowers. One could not help thinking what an addition a beautifully embroidered satin waistcoat would be to the modern evening dress of men. There are two frocks or skirts of white satin, with a large amount of fine embroidery quite spoilt by the addition of tawdry net and spangles, and bits of feathers worked in. People who do fine needlework should use nothing which is merely a fashion of the day, for when the first freshness has gone, only tawdry vulgarity remains. Good gold thread and silk will be things of beauty for hundreds of years, if the design is well carried out. There is always something touching and pathetic in the sampler—the work of very young girls with the little moral worked in such fine stitches; one wonders what injury was done to the young eyes. The name and age is generally put at the bottom: "Rachael Punchard, aged 14, 1704," "Mary Ann Langford worked this in the 17th year of her life, 1783." On both of them is a verse beginning

> "Look well to what you take in hand,
> For larning (*sic*) is better than house or land."

Amongst the curiosities is a Bible cover of Stuart embroidery, a nude Adam and Eve under an apple tree, the fruit in very high relief, and rampant and couchant animals on each side of the figures. Another piece of Stuart work has high-relief figures of Charles I. and Henrietta Maria. There are several landscapes worked in fine black

silk on white, which have almost the appearance of pen-and-ink drawings. Amongst the landscapes is one of a white silk lady standing by a white silk fountain and stream where a dog drinks; underneath is worked, "Aimable chien, viens avec moi."

Offering Commissions to Architects.

A FIRM of makers of billiard tables and accessories of billiard rooms are sending round a circular to architects in recommendation of their work, concluding with the sentence: "In the event of business we should, of course, recognise the usual architect's remuneration." The firm who send this perhaps know no better, but they have made a serious mistake if they think they can recommend themselves to the profession by such a course.*

STREET ARCHITECTURE: FORMAL OR IRREGULAR?†

IF we allow our minds to wander from the present, with its need of action and decision in small affairs, there is nothing so enthralling as the thought of carrying into effect unreal and apparently improbable projects of the mind; projects that to the architect will be connected with building operations, if not of great magnitude, at least of unimagined beauty. If, as we get older, we realise that perhaps it is well these day-dreams were never carried into effect, to have been under the spell will be some preparation for such opportunities as may occur actually in the future.

Think of starting *carte blanche* with an ideal city to build; the people would, of course, have to be ideal, too. They would want beautiful architecture, the effect of it on their minds would be as much considered as the effect on their bodies. Commerce would have no ugly side. The natural resources of the site would be equally agreeable. Formality and irregularity would be blended–

> diffused in every part
> Spirit divine through forms of human art.

Unfortunately for the individual architect, the comparative desirability of regular and irregular treatment of street architecture is rather an abstract matter for discussion than a practical question. It would, of course, be hard to find the man who would not tackle the question in real earnest; but, as a rule, whole streets are not given to the lot of one architect to design, nor is the architect the only judge of desirability. He may know what he wants, but it may not suit the man in the street or the man in the house. I think we shall find that the relative merits of the two manners of building are to be judged by a standard that in this workaday world no single class of persons can set up. Great schemes coming from the minds of such masters in architecture as Michelangelo, Inigo Jones, and Sir Christopher Wren were doomed to remain in the world of fancy and the unachieved. Some of these I will refer to presently. We can only judge them by such completed fragments as they have left. I daresay their designers had similar experiences to the modern architect; difficulties of site, lack of funds for the building, and patrons undecided upon what they required. It would not be uninstructive to compare the conditions under which they lived and worked to ours, to see, perhaps, whether the great ideas have any better chance now than then—given equally great men.

A definition of street architecture is hardly needed, it is the outcome of placing buildings side by side so as to form a continuous frontage to the street. The value of land and the necessity to economise space are the conditions that have produced it. The very complexity which determinees its existence, the vicissitudes of cities, their growth and their decay, make for irregularity, and sometimes for very charming irregularity.

Take, for instance, a city like Norwich, where the principal street winds round the castle, following the lines of the old moat; or Coventry and Bury St. Edmunds, with streets grouped round the monastery. They were originally poor enough stuff of wood and straw, from which the inhabitants were burnt out occasionally, and often had to retire to the castle or monastery in times of danger. There are very few examples of Gothic street architecture left that I have been able to find, and these only in illustration.

The most complete mediæval towns are to be found in Germany, the best, perhaps, being Ratisbon and Nuremberg. Both were very important places. One of the chief peculiarities of their streets is the large number of towers, some of them of great height, which were the domestic houses of many of the most wealthy and influential citizens. There is no attempt at regularity or symmetry either in the streets or houses. The position and size of doors and windows were dictated by considerations of convenience only, and the buildings generally have the merit of truthfully interpreting their internal economy. No space was wasted, business being conducted on the lower floor, while the citizen lived with his family over the shop. The steep-pitched dormer-lit roof was the store-house for goods and merchandise, raised or lowered by wooden cranes sheltered under picturesque tile-covered pents. Most of the best wooden decoration was in shop fronts. In street architecture, of which the shop was only a part, each design differed in treatment or in outline from the next one; and, as a rule, the upper stories were more highly decorated than the ground floor, where the decoration was mostly confined to the door of the dwelling house, leaving the shop in serviceable plainness. Surround such a city as this with all its original walls, gate-towers, postern-gates, and ditch, and you can imagine the romance and charm of an irregular city and its streets during the Middle Ages.

In England the movement from the older cities to the country is worthy of attention in passing, as it was the genesis of a street architecture of which there is much in the smaller towns, and even in the heart of some of the big manufacturing cities. The nobility may have planted their granges or mansions in the neighbourhood of some wealthy and industrious church centre, where the land had already been cleared and fertilised. We can imagine such a locality may have seemed a desirable one in Henry VIII.'s reign. However that may have been, after the country recovered from the dissolution of the monasteries, many hamlets grew into thriving country towns, the features of which were the church, the grange, and the High-street. The irregular architecture of such streets as these, as we see them now, is altogether charming. The doctor's house, the solicitor's office, the principal inn, and the neighbouring shops, present, as a rule, one continuous frontage to the street. There is variety of treatment according to the social importance of the inhabitant, and there is no formality nor method in the placing of them. Yet there seems to be unity in the whole street, the result not only of the mellowing years, but of local building materials and a tradition in their use and design that we shall have reason to notice later on. Wordsworth speaks of "the stream-like windings of that noble street" at Oxford, which is typical of many to be found in England.

The remains of formally laid-out towns and streets are traceable to the Romans. The spirit of control and exact discipline which characterised the Romans naturally pervaded their building undertakings. Their architecture exhibits reserve not perhaps the most attractive, for in art, as in nature, reserve is satisfying only when you feel there is something behind worth reserving, but still a reserve of power that fascinates. A power, too, that continues to exercise a profound influence upon our minds and actions, even though the conditions are so changed. Professor Lanciani, in his writings upon Rome, describes its genesis, which was anything but formal. The Sacra Via, or Queen of Streets, as it has been called, though straight in parts, had many turnings, and was rather a magnificent collection of buildings than a street in the modern sense of the word.

The towns built by the Romans after the Conquest and occupation of some neighbouring country, afford the best examples of regularity of plan. The favourite form of their towns was a rectangle, the fortified walls forming the four sides, with a gate in the centre of each. The principal streets were carried through in straight lines crossing each other at right angles: the Forum was placed in the centre of the town. Housesteads, in Northumberland, is a typical example of the remains of a Roman military town, in plan as we have described, with the Prætorium in the middle. The Roman town of Calleva Atrebatum, at Silchester, Hants, is on somewhat different lines. It occupies the site of a previous British fortified place, the Roman walls following the irregular lines of the British entrenchments. Inside the walls the town is laid out in a regular system of squares, or "insulae." In the centre stand the ruins of the Forum and a Basilica. No regular plan seems to have been followed in the insulae themselves; the space between the walls may have been too confined for a crowded population, who might have found it dangerous to build outside the city walls in a hostile country. Besides these and many other similar remains, are towns such as Lincoln, Colchester, Chester, and Chichester that are of Roman origin. Unfortunately there are only a few relics of the street architecture of the towns in their Roman state. At Cilurnum, in Northumberland, there are remains of colonnades along the façades of the streets showing that the form of street architecture then in common use was that of a continuous colonnade or verandah. The value of the colonnade, or "Stoa," was recognised almost invariably by the Romans in their streets. Mr. G. E. Fox has made a restoration of the Forum at Silchester from discoveries and architectural remains found on the site. The restoration is interesting in its indication of a formally laid-out square of street architecture. The shops, according to Mr. Fox were placed on the north and east sides of the Forum, which was itself surrounded by an ambulatory, the shops probably opening on to this outside ambulatory as well as on to the inner ambulatory of the Forum, thus getting plenty of light and great convenience for trade.

One of the finest ruined cities in the east is that in Syria called Jerash, generally considered to be identical with Ramoth Gilead. From its remains it seems to have been a complete Roman city of great importance, built to one plan without regard to previously existing buildings, which in all probability were a mere irregular collection of huts. The Roman buildings include three temples, two theatres, a stadium, a circus, propylea, and a basilica, baths, a triumphal arch placed outside the city walls leading to a finely laid-out street of columns, of which a great number are still standing in a circular peribolos. There is, besides, a bridge and a complete circuit of walls and gateways. The street of the columns is the main street of the city, running north and south, of a mile or more in length, paved with flag stones. There seems no reason to doubt that it was a magnificent example of formal street architecture. The city was apparently deserted soon after the Roman occupation. The remains show that "the street that is called straight," in Damascus, one of the oldest cities in Syria, was laid out on formal lines by the Romans. There is evidence that the street was once lined by columns, probably supporting a covered way to protect foot-passengers from the weather. If the houses, as was often the case, were lit only from a courtyard at the back, the effect of the plain wall with the ambulatory must have been very effective.

Another interesting class of towns are those which were founded entirely in the Middle Ages, built from their foundations for a specific object. They appear to have been based upon observations of the towns built by the conquering Romans, and the similarity in their disposition will be obvious by comparing the plans of both. These towns were founded by Edward I., who granted them special privileges to encourage their occupation and advancement. In England they were called "New Towns" or "Free Towns"; in France, where they were principally founded, "Ville-neuve" or "Ville-franche," names that frequently occur. In 1298 Edward I. wrote from Bordeaux to London desiring the authorities there to send him out four persons competent to lay out the plans of towns. "The most clever and able, and those who best know how to divide, order, and arrange a new town in the manner that will be most beneficial for us and for the merchants, and who shall be ready and willing to go for that purpose wherever we may send them." The best example in England is Winchelsea; in France, Mont-

* Since the above was written, we have received indignant letters from several architects, enclosing the circular. A provincial architect writes—"I have just added this firm's name to what I call my black list—that is to say that they, with a few other firms who sent me similar offers, will never be employed on any works I am engaged on."

† A paper read before the Liverpool Architectural Society on the 4th inst. by Mr. W. Curtis Green.

pazier. They are thus described by Parker: "These towns . . . are built on an excellent and scientific plan, combining very close packing with great convenience for individuals, while the principal streets were wide, open, and straight, crossing each other at right angles only. There are always two parallel streets at a short distance one from the other, and connected by short streets at frequent intervals; between these principal streets, and also in parallel lines, are narrow streets or lanes, corresponding to the modern mews and employed for the same purpose. By this means each plot of ground for building on is of a uniform size and shape, a parallelogram with one end facing a principal street and another a lane." The principal streets measure 24 ft. wide, the lanes 16 ft. wide, and the passages between the houses only 6 ft; these are the measurements of Montpazier the most perfect and regular of the so-called "English towns." "Near the centre of the town was a large market-place, at one corner of which was usually the church; and it should be observed that the principal streets do not cross each other in the centre of the market-place, but run in a line with its four sides, passing out from each corner in a direct line to the extremity of the town, as at Salisbury, so that the traffic did not interfere with the central space, which was planted with trees. In southern climates the houses round the market-place are built on arcades, or a series of groined vaults open on one side, with shops on the opposite side. These covered ways are of the same width as the main streets, 24 ft., so that there is ample space for two carts or waggons to pass each other without inconvenience." Thus laid out they afford unique opportunities for formal street architecture, and, if we may judge from the instances intact, that are illustrated to accompany Parker's account of their planning, the Gothic builders of the thirteenth century rose to the occasion with considerable success. If we further continue a search for the inspiration to formalism in street architecture during more modern times, we must turn again to Italy. Though there was no real lack of continuity in England between the art of the Middle Ages and the Renaissance, Italian workmen and foreign ideas played havoc, for a time, amongst the builders who were working from a tradition handed from father to son without either architect or trained designer. Then appeared Inigo Jones, the first architect in England, and probably the greatest. He spent some years in Italy, and returned saturated with Italian art. Speaking of this period, Mr. Blomfield says: "The homely fancy, the lovable humility as one might say, of English traditional art were laid aside; the art of this country was to be no longer an affair of happy instinct, but completely conscious, dependent on scholarship almost as much as on capacity in design. Henceforward abstract thought and imagination under restraint were to supersede the poetry of mediæval fancy;" a slow but remarkable change of sentiment and national character, making for formalism in religious and artistic expression. In Covent Garden Inigo Jones first conceived and carried out the idea of uniting a number of distinct dwelling houses in one architectural whole. Special distinction was given to this design by the composition of St. Paul's Church, with its fine portico and appended gateways, occupying the west side of the square. His travels in Italy evidently suggested the use of the piazza on the north and south sides. The only other street architecture that I know of attributed to him are the west side of Lincoln's Inn Fields and some houses in Great Queen-street, partially demolished.

To Sir Christopher Wren we owe the finest scheme ever conceived for laying out a city. Wren's opportunity of displaying his wonderful talents was after the Great Fire, when the City was a heap of ruins. He drew up a plan for its reconstruction, which he laid before the King and the House of Commons. This plan was accepted by the King, but eventually abandoned. Men were prepared to receive the idea of unity in the abstract; but not for a scheme, however admirable, which by reason of the necessary delay in rebuilding would have touched their interests or their pockets.

They were adverse to alter their old properties, and to forego the right to build their houses on the former sites and foundations. Thus, by a lack of public spirit—a want of confidence in the genius of the architect and the justice of the State—a grand opportunity was lost of making the new city one of the most magnificent in the world.

Wren avoided in his plan the deformity and inconvenience of the old town by widening the streets and lanes; giving efficient main thoroughfares north and south, east and west; "by planning the churches in conspicuous positions and insulating them; by forming the most public places into large piazzas, the centres of eight ways; by uniting the halls of twelve chief companies into one regular square annexed to the Guildhall; and by making a commodious quay on the whole bank of the river from Blackfriars to the tower."

"In making the plan he arranged that the streets should be of three magnitudes. The principal leading through the city, and one or two cross streets to be at least 90 ft. wide, others 60 ft., and the lanes about 30 ft., excluding all narrow dark alleys without thoroughfares, as well as all courts. The Exchange was to stand free in the middle of a piazza, and be, as it were, the centre of the town, whence the 60-ft. streets, as so many different rays, should proceed to all the principal parts of the city; the buildings to be contrived after the form of the Roman Forum, with double porticoes. Many streets were to radiate to the bridge. The streets of the first and second magnitude were to be carried on as straight as possible, and to open into piazzas. On the banks of the Thames was to be formed a spacious and convenient quay with large docks. He proposed that the churches should be designed according to the best forms for capacity and hearing, adorned with useful porticoes, and with lofty towers and steeples in the greater parishes. All trades that use great fires or yield noisome smells were to be moved out of the town."

This description, together with the bird's-eye view of the city as it might have been, were published in the *Builder* of July 3, 1875. It shows the possibilities of public buildings linked together by broad streets; the importance of grouping the principal buildings; and of good sites, and the advantage of a complete and consecutive scheme to the dignity of a great city.

An interesting figure in this connexion is that of John Wood, who was extensively employed in Bath and the neighbourhood during the first half of the eighteenth century. He seems to have been endowed with some of Wren's intellectual capacity for architectural conceptions. His execution was, of course, inferior to that of Wren; but he had the opportunity, which Wren was denied, of carrying out a very considerable scheme for building a city.

Contemporary with John Wood, of Bath, was Isaac Ware, who designed many houses of the street architecture type. It is interesting to trace the growth of London westward, taking the work of architects in chronological sequence. Ware designed some of Hanover-square, he did a great many houses in Albemarle-street, Berkeley-square, Bruton-street, Burlington-gardens, and Dover-street. Ware's work is distinguished by good planning, and by greater dignity and strength than that of his successors.

Passing over such names as Sir Wm. Chambers and the younger Dance, men of the old school of Palladian tradition, we come to a smaller breed, headed by the celebrated Adam brothers.

They designed several important buildings in Edinburgh, including some of the fine squares in the new town. Their work in London consisted principally in dwelling-houses connected in a continuous architectural treatment; they built more street architecture than any architect before or since their time, a great ideal of which was speculative building, a plan for money making that they seem to have originated. Their work is the most successful formal street architecture in this country; its value as a type of what should be more thoughtfully developed cannot be too highly estimated. As a composition, George's-square in Edinburgh, is exceedingly effective. The central block on the west side is a church, on either side of which are dwelling-houses or offices. This and Covent Garden are instances in which buildings designed for totally different purposes have been formed into one fine architectural scheme.

The next work of importance in formal street architecture was Regent-street and the houses round Regent's Park, the work of John Nash in the beginning of the last century. The Regent-street quadrant shows the beautiful effect that formal street architecture may attain, even though it be not of the finest in itself; the sweeping horizontal curves are admirably emphasised. Regent-street is one of the streets that has suffered considerably in the hands of individual leaseholders, a practical objection to formal street architecture that is very obvious.

There seems to be no restraint upon a tenant painting the exterior of his own frontage at the season and in the colour of his fancy; from the coping to the iron railings of the basement, every feature is divided in fair proportions by the conscientious house decorator. The fault lies as much with the improper use of stucco as with the tenant.

It is a material greatly despised of the public, but we all know the fine effect it has given to Italian architecture of the Renaissance used on flat surfaces with stone dressings and cornices. The fact is that any material may be used provided the nature of it is expressed in the handling. In studying the past, the value of building materials is brought forcibly to light. Everyone has noticed how the accident of a local building material easily obtainable, affects the appearance of a town for good or evil; or used to affect it when transit was not so easy, and the demand upon the originality of the architect so pressing. In wooded country, the plentiful supply of oak made a style of architecture for towns such as Chester. Bath stone and Aberdeen granite give the keynote to the building of the respective towns from whose neighbourhoods they come. Both materials suggest certain ways of building conducive to formalism, and irregularity is softened to harmony by a common material for expression. Brick and tiles give a character to smaller coast towns and villages, and these materials on the continent are used for whole towns, such as Pavia, Cremona, and Crema, built of brick made in the valley of the Po. Paris owes much to her fine building stone, while the lack of a suitable material in London has led to the most incongruous mixture of styles, and the place is a veritable collection of samples. I believe if it were entirely rebuilt in London stock bricks it would be a very much finer city than it is now. At the present day there is no material that plays so important a part in the construction of street architecture as iron. It is the ghost in the architect's cupboard; not the kind that Mr. Pecksniff kept; it troubles only the man who designs himself, and who would, if he could, "build in truth and design with beauty." It is a utilitarian material, and it it is not always easy to associate art with purely utilitarian requirements, such, for instance, as those of modern commerce. Is it only a material for engineers? Shall the future see the engineer, after having finished the ground floor of stanchions, girders, and plate glass, then call in the architect to design the building? I think it is a question that cannot be avoided when street architecture is under discussion, and street architecture is no contemptible addition to the written histories of the time which saw them built. The conditions have changed since art and religion evolved the architecture of the Middle Ages; the connexion between art and religion is now less obvious, but it is common sense that art can only thrive on lines parallel with the aspirations of a nation in whatever direction. I do not think it unreasonable to suppose that the nineteenth century will be famous for engineering works such as the Forth Bridge, and not for the architecture of the Revivals. We can console ourselves with the fact that the greatest works of engineering can be always wholly referred to the interaction of utilitarian motives and natural laws; and from these all architecture is distinguished by some subtle quality of fitness or beauty which is beyond analysis.

Can the subtle qualities of beauty and fitness be displayed when the whole ground floor is to be a sheet of glass to oblige the owner? The late Mr. Bentley told me that under no circumstances would he use iron, and his achievement in the roofing of the Cathedral at Westminster without it is notable. On the other hand, an architect as eminent has used it in any place that was convenient; but the layman would be unaware of its presence, so cosily is it buried out of sight. There is an attempt to use it for constructional purposes in George-street, Westminster, not without success, and I believe that some such solution to the question is the right one. Use it openly, and decorate it in a manner suitable to its nature, such as that employed in the eighteenth century in the design of grates, etc.

There are other restrictions which are insignificant to the engineer but are a trial to the architect. Our Baron Haussmann, the Building Act, lays a formal hand on picturesque irregularity by limits to the height of a building, to the projection of cornices and bays into the street, and to the size of windows, etc. These limitations hamper the architect, and in weighing the question of irregularity and formality they must be considered, and, in my opinion, favour formalism. But it is not my object to establish the practical difficulties of adopting either the formal or irregular treatment of street architecture. It is the *desirability* we want to get at. The difficulties of arriving at that need not be confused with the difficulties of carrying either method into execution. If the desirability of one or other method could be maintained the difficulties would remove themselves.

To arrive at the abstract quality of desirability it is not sufficient to express likes or dislikes. In Browning's words—

"Now, who shall arbitrate?
Ten men love what I hate,
Shun what I follow, slight what I receive;
Ten who in ears and eyes
Match me: we all surmise,
They this thing, and I that: whom shall my soul believe?"

But though it may be difficult, perhaps impossible, to set up a recognised standard of taste, certain tendencies may be observed and the arguments in favour of both manners of building set forth, and at this point you become indebted to my friend Mr. Maryon Watson, who has written an admirable paper upon this subject. He points out that the man in the house and the man in the street approach the subject of street architecture from mutually exclusive standpoints, and that the truth lies with a third party, who, living in one house and looking out upon another, remarks that in large cities houses are made partly to live in and partly to look on. This third party ought to be useful to us to-night as an unprejudiced person who has thought the matter over. But before allowing him to sum the matter up, I must quote again from Mr. Watson. He says: "There are no two ways about irregularity, but formality has its grades from the dreary procession of mile stones along the high road to the elaborate evolutions of the dance"—

"Mystical dance, which yonder starry sphere
Of planets, and of fixed, in all her wheels
Resembles nearest mazes intricate,
Eccentric, intervolved, yet regular
Then most, when most irregular they seem,
And in their motions harmony divine
So smoothes her charming tones, that God's own ear
Listens delighted."

This quotation illuminates the ground upon which the formalist takes his stand. It refutes the idea that Gower-street is typical of formal street architecture, for it is that leaden formalism which is often in people's minds when the subject is referred to—an error that ought to be dispelled. It is a strong position to take up, and I think the only reply to it is that the lover of picturesque irregularity seeks a harmony in confusion—a harmony as distinct as that between musical parts, which are never discordant but essentially different. Coming to common-sense considerations, irregularity has a firm foundation. It can point out a record of successes, and a vitality to-day that keeps up the best tradition. The many delightful fronts that are being built in many materials and many styles give pleasure to many people, and are charming surprises when unexpectedly come upon. It claims to truthfully express the internal economy of the house, as well as being an index to the taste and means of the owner in its decoration. I think briefly those are the strongest points in irregularity's favour, excepting and besides the fact that it is in possession, which is proverbially better than many arguments. It claims also—though not so loudly—that the majority of architects do not receive the academic training necessary for a proper conception of large designs, such, for instance, as Frenchmen receive. Witness a recent large international competition, which, though in every way enticing, was not won by an Englishman. It claims, also, that change is desirable and essential, street architecture being a comparatively brief and passing expression, and that the restlessness of the result is not a fault but a sign of growth and development.

The formalist will admit the successes that irregularity has scored, but he will also point out the weight of vast mediocrity that it has to support. There is no doubt that formalism has fewer failures, and that what there is of formal street architecture is of more uniform excellence than irregularity can show. The formalist maintains that a city is entirely an artificial creation, with limitations that are most happily recognised by a formal street architecture; that the historic tendency is towards formalism; that already streets have a tendency towards certain trades and callings, such as Long Acre for carriage builders, Cockspur-street for shipping agencies, Clerkenwell-road for clock makers, St. James-street and Pall-mall for clubs, and Harley-street and Wimpole-street for the medical profession. It would like to disclaim the use of steel in construction as only suitable for temporary buildings; it would like to discourage advertisement and vulgar blandishments; it would make for restfulness and repose, and inculcate the value of restraint and the interdependence of the man in the house and the man in the street.

I believe the man in the street has more interest in architecture than he is credited with. Besides, he is occasionally the man in the house as well, and has, therefore, opportunities of seeing both sides of the question. He realises when within that the outer front concerns his opposite neighbour as much as, if not more than, it concerns himself. His opinion of the architectural profession—for, of course, he has one—is probably based on first-hand experience between his own four walls, and the more convenient and perfect the inside the more will he trust the architect with the out. I do not see any means for irregularity or formalism to make headway with their ideals other than by immediate ministrations of common-sense applied to ordinary requirements. Let them both strengthen their convictions, but look out for the opportunity of suppressing them where they would mar by self-assertion a pleasing harmony that already exists. Both the motive of the design and the materials for carrying it into execution should in my humble opinion be carefully considered in relation to the existing or probable surroundings of the new building in question. I believe that the ideal city will show a unity that the formalist will welcome as superior to any ideal of his limited imagination, and that the lover of irregularity will protest it is not what he understood formalism to be. In the meantime, I believe the architecture of our streets would be advanced by advocating large and comprehensive schemes for improvements where they have to be made. A city, like any other complicated organism, is best understood by tackling it in the mass first and in detail when the time comes. Before closing I must refer to the Holborn to the Strand improvement. I remember—though I do not know whether it was publicly made—a proposal of Mr. Lethaby that impressed me very much. It was that the new street should start at the steps of the British Museum, a line at right angles to which would come out at Waterloo Bridge, thus giving a view of the river from the Museum and of the Museum from the river, and connecting two of London's finest monuments. The new street would be the altitude of an equilateral triangle, the Museum the apex, and the Embankment the base, the base angles being marked by St. Paul's at one end and Westminster at the other. Some day the Embankment on the other side of the Bridge will be made, and that could have added to this idea. I wish it were possible to throw a view of that proposal upon the screen. Had such a proposal been made in Paris it would have been received with enthusiasm. A Napoléon and a Baron Haussmann have explained to Parisians the ultimate advantages of a little despotism, and the Frenchman to-day enjoys the result. He is proud of such streets as the Champs Elysées, seen down a vista of trees terminated by a sunlit triumphal arch. English people appreciate it there, but for this country it is considered absurd. Work done in the past showing any unity of feeling is marked down. In Regent-street, in the Adelphi, in Russell-square the destruction has begun—in Russell-square as the leases fall in each front is stuck over with horrible terra-cotta trimmings. Architecture has given up concerning itself with streets, and is satisfied only with public buildings and problems of domestic luxury in private country houses.

Private houses show modern English architecture at its best, partly, I suppose, because of the part they play in English character, and partly because they administer to immediate bodily comfort. But even in country houses the most successful are those that have sacrificed some comfort or corner to save a principle or to preserve an idea—the idea of cohesion or unity, or whatever you like to call it; and if some sacrifice is necessary in a building, the home of one family, surely it is ten times more important in a great city where hundreds and thousands of lives are concerned. Ought he who pays the piper to call the tune when the piper is one of a row and the tune dependent on the united efforts of the whole band? I believe there is enthusiasm for, and love of, architecture at the present day, but it is frittered away in the craze for novelty and the liberty of the individual.

THE ROYAL INSTITUTE OF BRITISH ARCHITECTS.

The usual fortnightly meeting of the Royal Institute of British Architects was held in the Meeting Room, No. 9, Conduit-street, on Monday, Mr. John Slater (Vice-President) being in the chair in the absence of Mr. Aston Webb, R.A. (the President).

Mr. Alex. Graham (Hon. Secretary) announced the decease of Mr. Silvanus Trevail, Fellow, elected in 1892.

Mr. H. Hunter Crawford, President of the Edinburgh Architectural Association, and Mr. A. Ryan Tenison were introduced to the Chairman, and signed their names, on election to the Institute.

Monuments and Arts of Delphi.

M. J. T. Homolle, Director of the French School at Athens, then delivered a long discourse in French on "Le Trésor de Cnide et les Monuments de l'Art Ionien à Delphes," of which the following is an abstract:—

M. Homolle commenced his remarks by a tribute to the memory of Mr. Penrose, as an eminent Greek archæologist, and expressed his thanks to the Institute for having elected him (the speaker) as a member, and for the compliment which they had paid him in inviting him to come over and lecture there. In taking for his subject the discoveries at Delphi, he would single out for special treatment the Treasury of Cnidos, as a complete type of Ionic architecture of the sixth century B.C. To give a general idea of the discoveries at Delphi, and of the position of the Treasury in relation to the whole collection of buildings, he described the sanctuary of Apollo by the aid of the fine drawings of M. Tournaire, showing by the lantern the plan and elevation in its actual state, and M. Tournaire's restoration of the whole. The Treasury of Cnidos was situated at the first angle of the sacred road within the *enceinte* of the Temple; it was completely ruined, but could be restored by the aid of the fragments found in connexion with the foundations, or scattered about; some of them not perhaps belonging to that particular building, but similar in style to those found in connexion with it. The view of the Treasury in its actual state was shown, and a restored elevation of the front. The object of the lecture was (1) to justify the restoration by an analysis of its architectural elements; (2) to study the decoration of the monument in the architectural ornaments and sculptures discovered, and the traces of the painting by which they had been reinforced; and (3) to mark the place of the Treasury of Cnidos in the history of Ionic art. The plan of the small building was that of a temple *in antis*, showing a sculptured frieze bordered by egg-and-tongue ornament, with a pediment decorated with terminal figures of sphinxes. (All these various portions were separately illustrated by slides.) The two columns within the *antæ* were formed by terminal caryatide figures. The execution of the details throughout, though a little heavy, was broad and vigorous, and marked by a unity of character throughout the work. The frieze was continued on the four faces, the subjects being: on the east face, the apotheosis of Hercules; on the south face, the carrying off of the daughters of Leukippos; on the east face, the combat of the Greeks and Trojans over the body of Euphorbos, with the gods on Olympus as spectators; on the north face, the battle of the giants. In style and technique the sculptures formed two groups, differing in relief and in the rounded or sharp character of the execution. The proportions of the figures were those of Ionic art of the sixth century; the figures short and thick in proportion, and rather stiff in design. The composition was governed by a rigorous regard to sym-

metry, the principal groups containing each the same number of figures, placed in analogous but reversed attitudes on each side of the centre. The pediment represented the strife of Apollo and Hercules for the possession of the Delphic tripod; the style was the same as that of the friezes on the west and south sides, only somewhat more stiff and rude in execution. It represented a mixture of high and low relief, some of the figures being entirely detached, others in bas-relief. The acroteria were sphinxes of the same type as those found at Delos and on the Acropolis at Athens. The caryatide columns show points both of resemblance and of difference in comparison with those at Athens. There were traces in them of Egyptian influence. The polychromatic decoration could be well studied from the remarkable series of water-colour drawings made by M. de Fonseca. The colour was applied to the architectural order, to the friezes and pediment sculpture, and to the figures in the round. It was composed of three colours: white (being the colour of the marble, perhaps heightened by a glaze), blue, and red; the backgrounds generally blue, the draperies red. There were also traces of applied metal used to give further detail to the sculptures. The name of the building, Treasure or Treasury of Cnidos, was identified by inscriptions on the stones and by the detailed and clear description of Pausanias. It was a work entirely Ionic in character and spirit, marked by somewhat exuberant richness of ornament, a somewhat crude vigour of style, a great deal of invention, and executive skill of a high order. M. Homolle concluded a lecture of nearly two hours, delivered throughout with the greatest fluency of language, by some remarks on the importance of the Ionic influence at Delphi, and on the part played by Ionia in the development of Hellenic civilisation.

The Chairman said they had heard an exceedingly interesting lecture from M. Homolle, and as the hour was late, he would ask Dr. Murray to be good enough to propose a vote of thanks to the lecturer.

Dr. Murray said that after the cordial reception which had been given to M. Homolle, he need not assure him how sensible they were of the great compliment he had paid them in coming all the way from Athens to give that splendid address on one of the most charming Greek buildings that he (the speaker) or anyone else had seen. After the most interesting, and, he was sure, the most convincing arguments of its relationship to the art of Ionia, he must not attempt to express any opinion except that of the greatest admiration for everything that had been said. He would much rather call their attention to the fact that they were under an obligation to M. Homolle for what was an even greater matter than his appearance that night. He meant that from beginning to end M. Homolle had been the leading spirit of these excavations of the French at Delphi, which in our time had no equal. The task had by no means been completed, and he was sure all present would agree in asking M. Homolle to take back to Athens their cordial wishes that he might be able to finish the gigantic task with the same success that he had begun it.

Mr. Macmillan (of the Hellenic Society) said he took it that the great honour of being allowed to second the vote of thanks was due to the fact that he was the representative of the Hellenic Society in the humble capacity of secretary. He could most cordially echo all that Dr. Murray had said as to the pleasure it had given that distinguished gathering to listen to M Homolle's lucid exposition and eloquent description, not only of the general plan of the site of Delphi, but in particular of the monuments which had been revealed to them step by step. Perhaps he might be allowed to congratulate the Institute of Architects on their brilliant success in inducing M. Homolle to come to this country, and for the first time give an account of his great work. He was only sorry that the idea did not first occur to the Hellenic Society, but perhaps he might be permitted in that connexion to say to M. Homolle, in the name of the Hellenic Society, that they hoped very much when next year the Society celebrated its twenty-fifth anniversary, they might perhaps persuade him to make another visit to this country, and perhaps take up another point of the work before the Hellenic Society.

Dr. Evans, in supporting the vote, said that perhaps only those who had been over the site of Delphi in its old state, and remembered the rustic village covering all that wonderful mass of remains which had been got up by M. Homolle and his associates, could thoroughly realise the magnitude of the work which had been carried out there. It was a great thing to undertake. He spoke as an outer barbarian, and as one who had hardly a right to speak on the subject of classical Greek, but one felt that here in Delphi we had almost the beginning of Greek religion, and that they had the point of union with that still older religion they had been trying to trace in Knossos. He gathered from one of M. Homolle's associates that one of the most remarkable of the early objects found was an actual reproduction of one of the most remarkable objects found at Knossos, which took them back to remote antiquity. There on the site of the earliest religion of the Greeks; there where they found the most brilliant of the Greek gods—Apollo; on the site of what was really the most national centre of religion, where monuments were raised in honour of the triumph of the Greeks over the Persians and other enemies—monuments which recorded the great struggles between the East and the West, which some modern Athenians seemed to forget for the moment; there the French Government undertook the great work of excavation. When they remembered that they had not only to move a whole village, and spend vast sums of money, and conduct most difficult negotiations with a very jealous Government, one could only the more admire the work which M. Homolle and his associates had carried through, and he thought they must also admire the great public spirit of the French Government in undertaking the work. They had heard a great deal about the *rapprochement* between the French and the English, and he hoped one of the results of that would be that the English Government would take the lead which the French Government had given with regard to such undertakings. It was not only the greatness of the work and the actual excavation of monuments which showed the public spirit of the French people, and also the patience and devotion of those like M. Homolle who had carried it out; it was more than that—it was the painstaking and scientific reconstruction of the fragments which had been brought up, and the piecing together of monuments, which had been so prominently illustrated by M. Homolle that evening, which showed that beyond all this great undertaking, and all the enterprise which had been shown by the Government, they must pay homage before all to the genius of the explorer.

Mr. J. L. Myers (Christ Church, Oxford) also supported the resolution, and said they must all feel immense interest in the investigations of which M. Homolle had given so full and detailed an account, and must all have been struck with the extraordinary genius displayed in the adaptation of small means to small ends, and of little details in those monuments in which the Ionian artists clearly felt so very keen and healthy an interest. They saw this displayed in the representation of the lotus flower on one of the fragments which had been shown, and he felt it was one of those cases which showed in the truest sense a living art; where the artist had only to play the tune and the stone fell into its place—Orpheus played his lute, and the rocks fell. The fragments showed that there was living art in the details as well as in the great pieces.

Sir Lawrence Alma-Tadema remarked that he had listened to and followed every word of the lecture, and he hardly knew what to say. He did feel, however, that it must have been beautiful to have reconstructed the monuments, as had been done by M. Homolle, and it was a very great boon to all of them. He was, however, so full of what he had heard, that he would only add his sincerest thanks to M. Homolle for giving them such an interesting evening.

The motion was then put to the meeting and carried by acclamation. After a few general remarks on the subject of the paper, the Chairman, speaking in French, and addressing M. Homolle, said that he had great pleasure in offering him the sincere thanks of the Institute for the able lecture to which they had listened with so much interest. Some years before they had received in that room Schliemann, the celebrated explorer of the ruins of Ilium, a city half legendary, half historic. To-day they were proud to welcome M. Homolle as the revealer and reconstructor of the Treasury of Cnidos, of such great interest for architects and archæologists. They must not forget also their debt to the French Government for the loan of the splendid collection of drawings which decorated the walls that evening.

M. Homolle briefly replied in acknowledgment.

The Chairman announced that the next meeting of the Institute would be held on Monday, November 30. It would be a business meeting for the election of members, and Mr. William Woodward would move a resolution respecting the Liverpool Cathedral Competition.

EGYPT EXPLORATION FUND.

The seventeenth ordinary general meeting of the Egypt Exploration Fund was held at Burlington House, Piccadilly, W., on Friday afternoon in last week, under the chairmanship of Sir J. Evans (President).

Mr. H. A. Grueber (Hon. Treasurer) read the financial report, which, he said, in only one instance—that of the Archæological Survey—showed a balance on the right side of the page. In the case of the Fund proper, the excess of expenditure over income was not serious, but he had rather there had been no deficit at all. They had not been extravagant, and the Committee had done its best to keep expenses down, but, unfortunately, the receipts were under the mark of last year. The crisis at Boston had weakened their resources from that quarter, but the Committee there was getting into order, and they might hope for a speedy improvement. They had disbanded the affiliated branches at Philadelphia and Chicago. As they were able to send considerable consignments of antiquities last year to the principal museums in the United States, including Chicago, Philadelphia, and New York, it was to be hoped that the local organisations might again be revived. The general balance-sheet showed that the assets of the Fund and its branches amounted on July 31 to 4,914*l.* 2s. 5d., which was apportioned as follows:—To the Exploration Fund, 3,128*l.* 12s. 1d.; to the Archæological Survey, 798*l.* 16s. 4d.; to the Græco-Roman Branch, 936*l.* 14s.; and to the Survey Students' Fund, 50*l.*

On the motion of the Rev. F. C. Norton, seconded by Mr. Thompson, the report was adopted.

The President, in the course of his annual address, congratulated the members on the amount of good work done during the past twelve months by the different branches of the Fund, and on its prosperous condition—at all events, so far as numbers are concerned, for the losses by death and withdrawals had been as nearly as possible counterbalanced by the accession of new subscribers. Proceeding, he alluded to the losses which the Society had sustained by death during the year, and specially referred to the late Professor Mommsen. The most important work of the Exploration Fund during the past season had been carried on by Professor Petrie, with Mr. Currelly as his principal assistant, at Abydos. A large number of the objects found, which were exhibited at University College, London, during the month of July, and elicited a great deal of interest, had now been distributed amongst various institutions, including the British and Ashmolean Museums n England, and numerous public institutions in the United States of America and elsewhere. A remarkable feature in the case was that on the old temple site at Abydos there seemed to be remains of no less than ten successive temples, ranging in date from probably before the First Dynasty down to the Twenty-sixth. The ivory carvings of the early period presented a singular refinement in their work, and the glazed pottery—sometimes displaying a conjunction of two colours—gave evidence of the high state of perfection which the potters' art had attained before the Fourth Dynasty, or, say, upwards of 3,700 years before our era. Any points of contrast or resemblance between early Egyptian civilisation and that of Minoan Crete was at the present time of the highest interest and value, and Professor Petrie, in describing some black pottery of the First Dynasty, stated that "this class of pottery is unlike any known in early Egypt," and added that "the forms of the vases are clearly of the Greek family," and that a piece of the neck of a tall vase with a pointed base "placed side by side with black pottery of the late neclithic age from Knossos was in-

distinguishable in colour, burnish, and general appearance. They belong to one fabric, and the source of that is presumably Cretan." Amongst the objects from the early deposits before the Fourth Dynasty were naturally-formed flints, which Professor Petrie suggested had been picked up because of their likeness to sacred animals, and perhaps had been venerated before any artificial images were attempted. As to the work during the ensuing season, it had been arranged for M. Naville to continue excavations in the cemetery adjoining the great temple of Deir-el-Baharî. Although a vast amount of labour would have to be expended in clearing the spot of the accumulation of soil that had been deposited upon it in connexion with the temple excavations, it was hoped that some of the early tombs might be rendered accessible within a few weeks, and that a fair harvest of interesting relics might be reaped. The future operations of Professor Petrie on behalf of the Fund had not yet assumed a definite form. It had been proposed, however, that he should carry on excavations in the immediate neighbourhood of the Step Pyramid of Sakkara, which was generally regarded as being among the earliest of the pyramids and anterior to those of Gizeh. Looking at the very great and, indeed, exceptional interest of the site, the Cairo authorities were not unnaturally averse to delegating its exploration to any other body on the usual terms. The Committee of the Fund, recognising the historical importance of the discoveries likely to be made, agreed to undertake the exploration on special terms. In addition to the work at Sakkara, it was proposed to carry on excavations on some other site at an accessible distance hereafter to be arranged. Having referred to the work of Dr. Grenfell and Dr. Hunt in their excavations in search of papyri at Oxyrhynchus and the Fayoum, the Chairman said the main work of the Archæological Survey lay last season among the northern tombs of El Amarna, where those of Pa-nebesi and Meryra the Younger were exhaustively worked out in facsimile drawings by Mr. N. de Garis Davies. This gentleman also spent a considerable portion of his time at El Till, and a fortnight at Beni Hassan. The Archæological Survey, in the execution of its task, was obliged to occupy itself with all monuments, however unsightly or badly preserved, and had at present the good fortune to be engaged on the records of perhaps the most attractive chapter in Egyptian history, marked by a striking and novel development both in religious thought and in art. Almost all the materials for the study of this remarkable movement were supplied by the tombs, boundary tablets, and ruins of El Amarna, the site of the new capital by which the new epoch was signalised, and every Egyptologist lived in hopes that some fresh light will be ere long thrown on this period. In conclusion, the Chairman said that a healthy industry was pervading every branch of research, whether in excavations and explorations, the publication of memoirs, records, and texts, or the history, philology, and mythology of Egypt.

Professor Petrie said that at the close of one of the main enterprises of this Fund, it was well to consider how far they had carried out the object with which it was begun. The first principle in view had been the unfolding of the history of Egypt, a history which is the most important of all to the Western World, as it is the elder brother of all the civilisations of the Mediterranean. To understand how the land had been developed, what changes it had undergone, and what relations it had had with other countries, was to explain the past course of our own civilisation, and give a truer view of the nature of man than could be gained from any other means of study. So far as the acquisition of material objects is needed to encourage the individual interests of museums, and to educate the public by actual contact with historical evidences—so far they had an interest in distributing a portion of what they found. And there was also another very important reason for spreading the actual antiquities over several centres. The risks due to many peaceful causes—to say nothing of the greater risks of warfare—rendered any one museum at least liable to serious injury. At the present moment the whole remains that had been recovered of Cretan splendours are at the mercy of half an hour's fire in an old barrack. And to trust all one's eggs in one basket—to the immunity of one place from fire, riot, fanaticism, theft, and war—is an unfair treatment of those scanty remains which are all that tell of the great past. It was, therefore, the true policy to spread the actual objects found over a wide area, as the Fund is in the habit of doing; and to publish everything fully and rapidly, without any undue expense which would detract from the subsequent work. When some people said they would like more costly publication, let them say also whether they wish to reduce the completeness of the record issued or the amount of future work; then they should know what they really mean. Now, in view of these principles, look at the result of their four years at Abydos. They had been costly years, but could they have got more for their money? He certainly thought not. He was well satisfied to have given four years of his life to that work; and he thought they might be equally satisfied to have each given four of their guineas to it. To have recovered and published in order the history of the early kings, to have shown what the arts and skill of the Egyptians were in those primal days, to have illustrated the rise of the civilisation, to have uncovered the successive temples of 4,000 years, and to see more of the beginning of the grandeur of Egypt than they knew of the early condition of the European states, was the greatest prize that was to be gained in the study of the history of man. Some said, "Why not continue to work in so rich a field?" He replied, "We do not make things, we find them." After exhaustively turning over every handful of the myriads of tons of dust at the Royal Tombs, after recovering the plans of all the temples in that 20 ft. of ruins down to native sand, there must be a close of that flow of results. The general cemetery of Abydos had been partly worked by them during three years in addition, with the very best and sharpest labourers, but yet scarcely any history had been obtained there. Therefore it did not seem at all promising to continue to work in a general cemetery which had done nothing to help them. The great historical sources having now been exhausted, it was rather to some other site that they must look for the continuance of the main objects of the Society. He must give his best thanks to the staff of workers who have so cordially, and many of them so generously, helped in these labours. Miss Hansard had given most accurate and beautiful copies of many of the sculptures and inscriptions, often assisted by Miss Murray's knowledge of the language and fine copying. Miss Eckstein helped by being responsible for attending to all objects found; cleaning, marking, and storing. His wife took part in all the varied labours of the camp. Mr. Stannus did a large part of the planning of the temples. And the permanent workers, Mr. Currelly and Mr. Ayrton, heartily prepared plans and descriptions, besides looking after large sections of the workmen, in which, also, Mr. Rawnsley took part. So far as he could see, all the information which they could hope to obtain had been safely garnered; and a great deal more had been recorded than had ever been understood in such a site before. Now, regarding the future, there had been some difficulties through no cause of their own. So far back as eighteen months ago, he had ascertained from Professor Maspero that he had no objection to them working at Sakkara in order to continue their series of historical discoverles of the Royal Dynasties. Professor Maspero showed the same impartial furtherance of scientific knowledge which has always distinguished him. But when the official sanction of the Egyptian officials in Cairo was desired, it was said that the interests of the museums prevented the Fund working. They then offered to work without claiming anything that the museums might want, and now they were informed distinctly that, nevertheless, the application was refused. The interests of the museums were not, therefore, the sole cause of hampering their researches. It was not thought desirable that he should say anything more on this subject. He might, however, remind them that the ground formerly reserved for the museums had been divided between six parties of Germans, Americans, Italians, and French, and the work of these parties was favoured diplomatically, and in some cases financial aid was given. More than this he would not say about the situation.

Dr. B. P. Grenfell proceeded to give an account of the excavations which he and Dr. Hunt had carried out at Fayoum, Hibeh, and Oxyrhynchus. He said that in March, 1902, just as they had finished all that they wished to excavate in the Fayoum, a fortunate chance led to them finding the rich Ptolemaic necropolis at Hibeh, which was about 100 miles south of Cairo. The excavations there led to the discovery of many third century B.C. papyri, including numerous literary fragments. They then visited Cynopolis, which produced no results, and then returned to Oxyrhynchus, which during their seven years' absence had remained practically untouched. The ruins of the ancient Oxyrhynchus, which was about 100 miles south of Cairo, were 1¼ miles in length, and covered an area which was exceeded by few cities in Egypt. The good fortune which attended them in 1897 did not desert them, and they found an immense mass of papyrus. The bulk of the documents from one mound belonged to the third century after Christ, with some specimens of the second and fourth centuries, among which Latin papyri were not uncommon. In the other mound the papyri ranged from the first to the fourth century after Christ. It would almost seem as if they had come upon the remains of libraries of classical and theological writings. Two of the theological fragments of the third century were of exceptional interest. The first consisted of part of a collection of sayings of Jesus, similar in style to the so-called Logia discovered by them in 1897. [Dr. Grenfell gave much interesting information and suggestion on this portion of the subject which it hardly lies within our province to report.] What historians would regard as the jewel of the find was the discovery of a Latin historical papyrus of considerable length. On the back was written the text of the Epistle to the Hebrews, but on the front, in a beautiful uncial hand of the third century, was a new epitome of the History of Livy, books 37-40 and 48-55. Dr. Hunt and he left next week for Egypt, and the excavations at Oxyrhynchus would be resumed before the end of the month, and since there was still a great deal of work before them, he hoped the money would be forthcoming to continue there until the site was thoroughly exhausted. It was true that the unopened cases of papyri, which now threatened to overflow the room in which they were stored, contained the most valuable collection of papyri in existence, but excavation was a kind of gambling, and now that the French, Germans, and Italians were entering into the field which Dr. Hunt and he opened, it was impossible for them to stop unless circumstances absolutely compelled them to do so. Another ten years or so would probably see the end of excavations in Egypt for papyri, and, indeed, of excavations in Upper Egypt altogether. The chances of accidental and sporadic finds would remain indefinitely, but it must be remembered that no excavations were worth undertaking, even if they were practicable, unless there was a reasonable prospect of finding something important. The Egyptian Delta, from Cairo to the Mediterranean, was too damp for the preservation of papyrus, and their successors must, if they wished for new theological texts, have recourse to Abyssinia or the Soudan, where they were not likely to find them in Greek. If they desired new classical texts, they must fall back on Herculaneum, the charred rolls of which required years to unwind, and even then could only partially be deciphered. Dr. Grenfell concluded his paper with an eloquent appeal to the English Government and nation to recognise the great importance of Egyptian archæology, instead of treating our occupation of Egypt as of merely political and commercial importance; and he contrasted with our national indifference on this subject the example of Napoléon, who by the assistance of the *savants* whom he took with him on his Egyptian campaign, had laid the foundation of Egyptian archæology.

A cordial vote of thanks to the Chairman was agreed to on the motion of Judge Baylis, K.C., seconded by Mr. J. S. Cotton.

PREVENTION OF WATER WASTE.

A CONFERENCE between the Plumbers' Company, the Royal Institute of British Architects, and some of the larger water undertakings, with reference to the waste of water in domestic use, was held on Tuesday in one of the Committee-rooms of the Guildhall. Dr. Robert Crawford, the Warden of the Company, presided, and it was stated by Mr. Coles, Clerk of the Plumbers' Company, that invitations to the conference had been addressed to authorities representing a population upwards of 100,000. Gentlemen were present on behalf of the Local

Authorities of Birmingham, Cardiff, Dublin, Glasgow, Liverpool, Plymouth, Sheffield, the Royal Institute of British Architects, the Tees Valley Water Board, and the British Association of Waterworks Engineers.

The Chairman explained the efforts which the Plumbers' Company had made to secure the better practical education of plumbers, and said that, although the country had been thoroughly roused to the great advantages to be derived from the increase of skill and education on the part of the plumber, especially in the case of the young plumber, it must be acknowledged that the movement in the direction which was most essential, namely, the sanitary side, had not been quite successful. Throughout the country 12,000 plumbers had been registered, and the position of the plumber had undoubtedly greatly changed. The Plumbers' Company had now been asked to take a further step, and endeavour to act as a connecting link between architects on the one side, and the water-supplying authorities on the other, with a view to secure the profitable and economical use of water. As a preliminary to the discussion, he proposed, "That this conference of architects and water authorities approves the efforts of the Worshipful Company of Plumbers to secure the more efficient training of plumbers, and the registration of qualified men, and pledges itself to support the Company in their endeavour to secure the necessary legislation in furtherance of that object."

Mr. Alderman Hind (Stockton-on-Tees) seconded the motion.

Mr. H. D. Searles-Wood, representing the Royal Institute of British Architects, proposed, "That, with the object of giving practical effect to the previous resolution, the representatives of the Royal Institute of British Architects and the Water Authorities present recommend that preference be given to the employment of registered plumbers to carry out and inspect plumbers' work executed under architects and Water Authorities." He explained that, while the Royal Institute of British Architects were strongly in favour of the movement for the better education of the plumber, they could not pledge themselves to the sole employment of registered plumbers, because, as architects, they did not interfere between the contractor and the men whom he employed; but whatever system of technical training might be adopted, the Institute would strongly deprecate any interference with the apprenticeship system.

Mr. Alderman Holdsworth (Bradford) seconded the motion.

Mr. E. A. Lees (Secretary to the Water Committee of the Birmingham Corporation) asked whether the resolution pledged the conference to recommend the employment of registered plumbers only, because in Birmingham, as elsewhere, the work of some plumbers who were not registered gave as much satisfaction as that of others who were registered.

Mr. Atkinson (Hull) said that if the Corporation of that city were to recommend that work should be given to registered plumbers only, the unregistered plumbers would be in arms.

The Chairman pointed out that there was nothing in the resolution to warrant the rejection of the plumbers who were not registered, but the object was, of course, to encourage the registration of plumbers.

The resolution was then adopted.

A discussion followed on the subject of waste prevention in the domestic use of water, Mr. Lees, Mr. Thomas Blashill, Mr. Gale (Glasgow), and others speaking as to the standardisation of fittings, model by-laws and regulations, and other measures which might be submitted for the approval of the Local Government Board. Eventually, on the motion of Mr. Searles-Wood, seconded by Mr. Bancroft (Hull), it was resolved to form a Committee representing the Plumbers' Company, the Water Authorities, architects, and the British Association of Waterworks Engineers to consider the question of standard regulations and fittings.

COMMERCIAL APPLICATIONS OF LIQUID AIR.—It is reported that liquid air is delivered in Berlin at the price of about 2s. per gallon. The receptacles used are made of glass, with double walls, the space between the walls being filled with suitable insulating material; the walls silvered to prevent the radiation of heat and the whole enveloped in an insulating material. They are said to retain their temperature for fourteen days. Several drops of the liquid in a glass of water produce freezing, and it is intended for such uses as refreshing drinks and improving the condition of the air in sick-rooms.

A NEW ROCK-BORING APPLIANCE.

LAST week we were invited to inspect the operation of a new labour-saving device intended for use in mines, quarries, and on all works where stone is used for structural purposes. The apparatus is not in any way a machine drill, but is rather a drill holder and turner arranged in such a way as to enable one man to do work for which the assistance of two men has been required heretofore.

In order to make clear the nature and object of the device, which is termed by the inventor the "Drillibite," a brief description is necessary. We will first describe the arrangement of the apparatus for mining work.

An ordinary spreader bar, with a cylindrical steel shaft is set up vertically between the floor and roof of a working, and at a suitable distance from the face of the rock. Upon the shaft of the bar is clamped a cylindrical body, which we will call the tool-holder. The cylinder contains a piston to which are attached powerful grip levers holding the drill tool, and the levers are so arranged that a very slight pressure is sufficient to grip the shank of the tool with very considerable force. The force necessary for this purpose is afforded by a spiral spring placed at the back of the levers, and held in position by a cover closing the back end of the tool-holder. The shank of the drill passes through the centre of the spiral spring, and projects through the cover of the cylinder. Inside the cylinder suitable gear is provided for drawing back the piston, and at the same time for rotating it through part of a circle after every stroke of the hammer, and after such partial revolution the spiral spring throws the tool forward to its original position in the hole that is being bored. Connected with the cylindrical body of the tool-holder is a bar extending diagonally to the ground and arranged so that its lower end may be placed in the most convenient position for the operator. At the end of the bar is a simple mechanical device, provided with a pedal or foot lever connected with a wire cord attached at the further end to part of the mechanism by which the piston of the tool-holder is drawn back and rotated.

In actual operation the workman stands a little behind the tool-holder, and places the foot-lever so that it is close to one foot. The tool being adjusted to the point at which it is desired to drill a hole in the rock face, all the workman has to do is to keep on hitting the end of the tool projecting through the holder, and to press down the foot-lever between each stroke. An automatic escapement is fitted to the foot-lever device, so that a simple downward pressure of the foot is sufficient to cause the withdrawal, twisting, and replacement of the tool, and a simple arrangement in the same device regulates the extent of the arc described by the tool between each stroke of the hammer. No forward adjustment of the tool-holder is required, because, when the tool is thrown back into the hole, the spiral spring is fully extended, and therefore exerts comparatively little pressure on the grip levers. Consequently, the force of the blow given by the hammer is sufficient to drive the tool through the holder to such an extent as may be necessary. On the other hand, when the tool is thrown back, the spiral spring is compressed, and causes the grip to hold the shank very lightly during partial rotation, and at the commencement of its return stroke.

As usually set, the tool completes a circle in about fourteen strokes, and from the tool marks made in the tests witnessed by us last week, it is quite clear that the action of the apparatus is extremely regular and satisfactory. Other noteworthy features are that the tool can be set at any desired angle with the working face, and when once set it is held at the correct angle until the hole has been drilled to the requisite depth.

Such are the essential features of the invention, but we ought to mention that for builders and contractors a more convenient method of using the "Drillibite" is provided by a portable stand, comprising a head with two claws for catching hold of the rock, and two hinged legs with pointed ends that can be stuck firmly into the ground. A third leg is hinged to the frame for the attachment of the foot-lever device before mentioned. By the use of this stand the "Drillibite" can be applied to drill holes in any position, vertically, horizontally, or at any angle.

It is evident that the saving of one half the manual labour formerly required must represent a very considerable economy in contract and other work, and a further saving should be effected by the greater speed at which work can be performed by this semi-automatic machine.

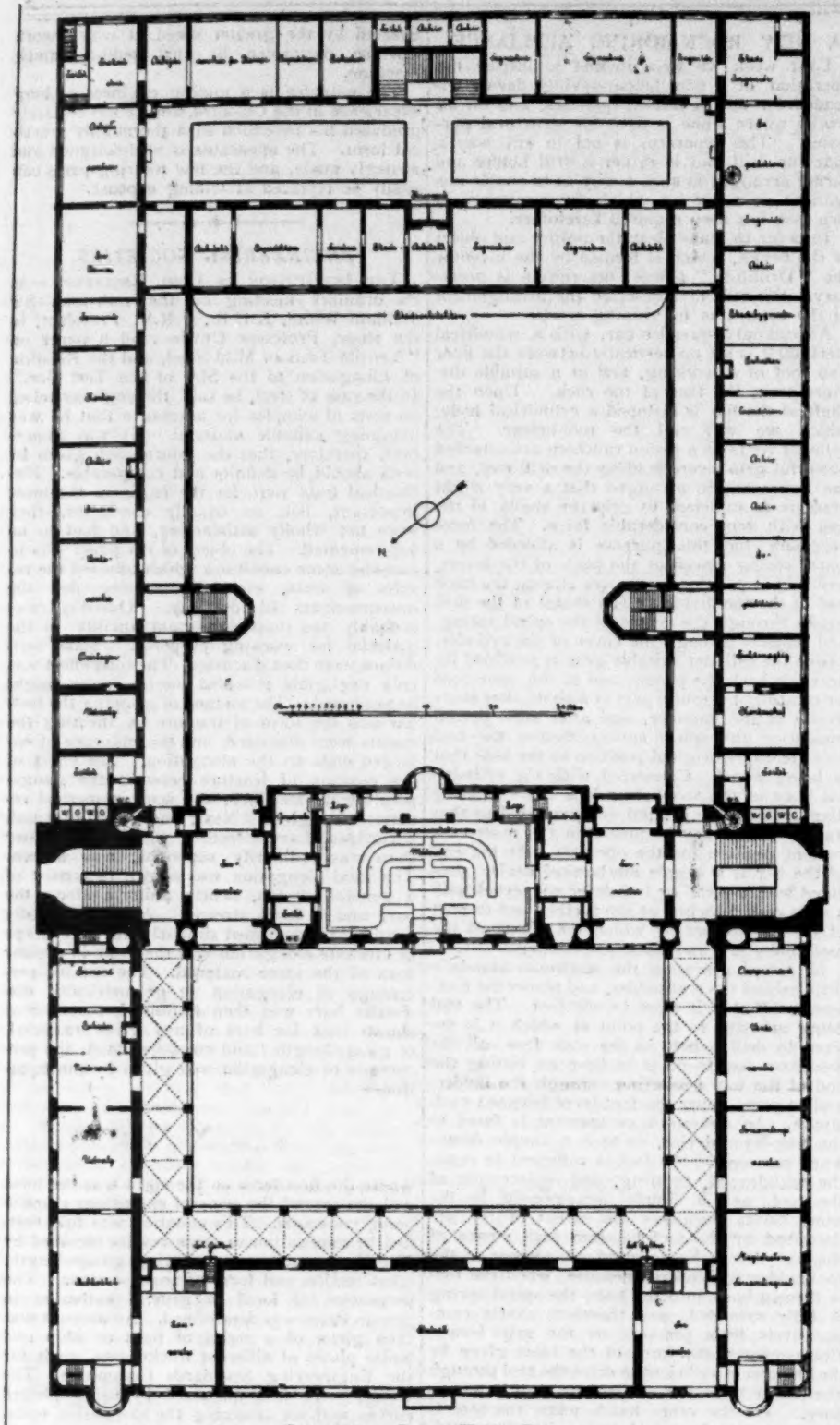
The patentee is a mining engineer of long experience in the Colonies, and he has certainly produced his invention in a thoroughly practical form. The apparatus is well-designed and strongly made, and the few wearing parts can easily be replaced at trifling expense.

ENGINEERING SOCIETIES.

THE INSTITUTION OF CIVIL ENGINEERS.—At the ordinary meeting on the 10th inst. Sir William White, K.C.B., F.R.S., President, in the chair, Professor Unwin read a paper on "Tensile Tests of Mild Steel, and the Relation of Elongation to the Size of the Test Bar." In the case of steel, he said, the engineer relied on tests of samples for assurance that he was obtaining suitable material. It was important, therefore, that the information given by tests should be definite and comparable. Mechanical tests were for the engineer the most important, but, as usually conducted, they were not wholly satisfactory, and had to be supplemented. The object of the paper was to consider some conditions which affected the results of tests, especially as regarded the measurements of ductility. Ductility was probably the most important quality in the material for working purposes. Some conditions were then discussed. The time-effect was only negligible provided inertia forces might be neglected. The method of gripping the test-bar and the form of fracture as affecting the results were discussed, and the influence of enlarged ends on the elongation. The effect of the position of fracture between the gauge-points was examined, and some numerical results were given. Next, the effect of small variations of cross section, which was greater than was ordinarily supposed, was shown. The total elongation was shown to consist of a general stretch, nearly uniform along the bar, and a local stretch. As geometrically similar bars deformed similarly, the percentage of ultimate elongation was the same in similar bars of the same material. The law of percentage of elongation in geometrically dissimilar bars was then examined, and it was shown that for bars of any given material, of gauge-length l and cross-section A, the percentage of elongation was given by the equation—

$$e\,\% = \frac{c\sqrt{\text{A}}}{l} + b$$

where the first term on the right was the local and the second the general extension, c and b being constants. This equation was first verified by application to some results obtained by Mr. Barba on bars of varying gauge-length, cross section and form of cross section. The proportion of local to general extension in certain cases was determined. An account was then given of a series of tests on ship and boiler plates of different thicknesses, made for the Engineering Standards Committee. The results were first discussed by using plotted curves without assuming the elongation equation. Taking from the curves the elongations for bars of a standard form, the real relative ductility of these bars was found. This was compared with the elongations for bars of constant width, such as were generally used in testing. It was shown that the elongations in the latter case were very misleading as to the relative ductility. In the case of similar bars the ductility decreased as the thickness of the plates increased. But the results on bars of constant width would lead to the conclusion that the thickest plates were the most ductile. The constants in the elongation equation were then given for the bars in each of six series of tests, and for plates of ¼ in. to 1¼ in. thick, with a detailed comparison of the elongations calculated by the equation and observed in the tests. A further series of tests on plates with varying percentages of carbon was given. The constants c and b in the elongation equation decreased as the percentage of carbon increased. Lastly, a series of tests was made by Mr. F. C. Fairholme, of the Cyclops Steel Works, on short test-bars cut from tires and axles. It was shown that the elongation equation was applicable to these short test-bars. The forms of short test-bars which could be used in such cases was discussed, and a very simple recommendation was made which would secure that in all such tests the elongation would be comparable. The question of quality figures for



Copenhagen Town Hall. Plan.

materials was then examined. It was pointed out that if quality figures were to be of value the tests must be made on similar test-bars, or the results must be reduced to equivalent results on similar bars. The values were examined of the quality figure for the whole of the tests described in the paper for test-bars of different areas of section.

Illustrations.

NEW TOWN HALL, COPENHAGEN.

THE Copenhagen Town Hall, of which we give some illustrations, has been completed this year from the designs of Herr Martin Nyrop, who was architect for the exhibition buildings at Copenhagen in 1888, erected on the site on which the Town Hall now stands. Herr Nyrop's design for the Town Hall, after several competitions, was accepted by the Town Council in 1892, and work was commenced in the spring of that year.

The plan shows the general disposition of the buildings. The smaller quadrangle is covered, the other one open.

The materials used for the walling are mostly a light-coloured stone, and granite for the plinth.

The design, as will be seen, is not a reproduction of any one of the leading styles of architecture, but contains features which may be attributed to suggestions from various styles. The tower has a distinctly Lombardic appearance except for the finish, which is northern in character and not altogether satisfactory. In the main, however, the building presents a satisfactory unity of style and treatment, and shows a good deal of originality without anything that can be called eccentricity.

The photographs of the various separate portions of the building, shown in the second sheet, were sent to us without any titles affixed to them to indicate in what part of the building they occur. This, however, is of no great consequence; they were selected, from among a considerable number, to indicate the degree of originality to be found in the treatment of the doorways and other features, and serve to show that this is no ordinary academical architecture. The design of the door in the left hand corner of the plate, with its carving *à jour* in the upper panel, is especially good. In the middle of the plate is a view of the larger quadrangle, and below it one of the main entrances from this quadrangle.

On the main front, shown in the general view, the figures on each side of the balcony over the central entrance are bronze statues holding shields with armorial bearings, and over the balcony is a statue of Bishop Absalon, who is called the founder of Copenhagen, in copper relieved with gilding. The arms of the city, three towers, are introduced into the architectural decoration in many places; they are to be seen over the door in the lower left hand corner of the sheet of details, and on a shield in the centre of the roof in the general view.

The smaller (covered) courtyard, with a glass roof, is really intended as a place for specially convened public meetings. Two small staircases at the angles lead up to the upper loggia, which runs all round the court, as shown on the plan. This loggia contains a number of slabs bearing inscriptions referring to important events in the history of the city—sieges, great fires, granting of charters, etc.

Two large staircases, accessible from this court, lead to the central block of building, in which is the Council-chamber (see plan). The staircase on the left, called the "Citizen's Staircase," is decorated with carved oak balustrades representing a procession of artisans employed on a large building—architect, mason, joiner, carpenter, painter, electrician, bell-founder, slater, etc. The Council-chamber is wainscoted, with a foliage frieze painted in green above the wainscot. The staircase on the right is the "Presidential Staircase," with panels of polished marble and brass balustrade, all the materials presenting a contrast to that used in the "Citizens' Staircase" on the other side. The suite of rooms extending along this wing, and leading round to the large apartment in the centre of the main front, are all intended for the use of the President and Mayors of the town, and are decorated with oak panelling and silk tapestry. The large room in the centre, not yet fully decorated, is intended for official entertainments.

In the remaining buildings surrounding the larger courtyard, and which are treated in a simpler manner, are grouped the various municipal offices, such as the administrative, poor law, sanitary, hospital, engineering, and surveying departments. The central courtyard is laid out as a garden with a fountain in the centre, thus giving a pleasing and cheerful look out from the windows of the business rooms; a point often neglected in English official buildings, where it seems to be generally supposed that any kind of gloomy courtyard is a good enough spectacle for the employees to look out upon.

Altogether, we think Copenhagen is to be congratulated in possessing, in its new Town Hall, a fine and remarkable building, a credit to its architect and to the city.

NEW PREMISES, LEICESTER-SQUARE.

THE front towards Leicester-square, of which we give an illustration, was carried out from the designs of Messrs. Wimperis and East, as the firm was styled at that time. Since then, Mr. East has gone to South Africa, and another partner has taken his place, the firm being now "Wimperis and Best."

The drawing was exhibited at the Royal Academy this year.

The second, third, fourth, and top floors are occupied by the Green Room Club.

The materials of the front are: Bays and dressings in Bath stone, general face in salt-glazed bricks and quoins of gauged red brickwork, and Broseley tiled roof.

The builders were Messrs. Prestige and Co.; the electric push-button lift was provided by the Otis Co.; the heating of the building throughout was done by Mr. Gould; the iron casements were by the Crittal Manufacturing Co.; and the carving was done by Mr. William Hearn.

STEDHAM MILL, MIDHURST, SUSSEX.

THIS little flour mill was built in the summer of 1902, to replace one destroyed by fire, which contained an old-fashioned stone plant run by a water wheel.

The new mill contains a complete roller

plant driven by a 48 in. turbine, with a 6½ ft. fall of water, giving an output of 1½ sacks per hour; the whole plant being provided by Messrs. Henry Simon, Ltd., of Manchester.

Estate labour and local materials were employed throughout. The walls up to the ground floor level are built with stone from the old mill, and above the plinth in brickwork, strengthened by buttresses, while piers mark the positions of the heavy rolled steel joists which carry the floors. The roof is of simple king-post construction, and is covered with tiles. The floors were laid with 9 by 3 deals, set flat-wise without joists to save headroom.

The general aim was to give some interest to a purely utilitarian building by turning its practical necessities, such as the ventilating shaft with louvres, and the turbine house, etc., to account in the design in an honest and straightforward way, and by taking every care with the materials and details, the whole design being treated in a simple and broad manner.

The illustration is from the tail-water side, showing the turbine house and ventilator, and the drawing was exhibited at this year's Royal Academy.

The architects are Messrs. W. A. Forsyth and H. P. G. Maule.

DESIGNS FOR A VILLAGE CHURCH AND A COUNTY TOWN CLUB.

The drawing showing these two very characteristic designs was exhibited at a Royal Academy exhibition some time back, and was included at the time in the *Builder Academy Album*, but has not appeared in our usual weekly publication.

The intended materials in both cases were the same; the light bands of stone roughly worked, and the dark bands to be tiles laid flat.

The designs are by Mr. G. Ll. Morris.

COMPETITIONS.

New Parliament Houses, Denmark.—The Danish Parliament has just sanctioned a proposal to rebuild the castle of Christiansborg, Copenhagen, which was destroyed by fire in 1884, for the use of the Houses of Parliament, Supreme Court of Justice, and to furnish room for great State festivals given by the King of Denmark. The cost, not including the artistic decoration of the interior, is computed to be 350,000*l.*, and a commission has been appointed to fix the rules for the competition for designs. The premiums offered for sketches range from 100*l.* to 200*l.*, and at the final competition a first premium of 500*l.*, as well as two of 150*l.*, will be given.

ARCHITECTURAL SOCIETIES.

Manchester Society of Architects.—A meeting of the Manchester Society of Architects was held on the 12th inst. at the Chamber of Commerce Rooms, Mosley-street, under the presidency of Mr. J. W. Beaumont. It was announced that the Council had awarded the following prizes:—For the most satisfactory work in the R.I.B.A. course at the Manchester School of Technology: First year course, Mr. R. J. Vernon (prize value 4*l.* 4s.); second year course, Mr. S. Moss (prize value 4*l.* 4s.) For the best work in the evening classes of architectural design at the School of Art: Mr. H. B. Laycock (prize value 4*l.* 4s.) For the best set of measured drawings and sketches suitable for publication in the Sketch Book (Mr. Beaumont's prize): Mr. C. Paterson (5*l.* 5s.) For the best set of architectural sketches in connexion with the summer visits: First prize, Mr. Frank Dyer (3*l.* 3s.); second prize, Mr. J. H. Somerset (1*l.* 1s.) For the best set of measured drawings of old work: First prize, Mr. J. H. Somerset (3*l.* 3s.); second prize, Mr. R. J. Vernon (1*l.* 1s.) For the best commentary on old buildings of the neighbourhood, in connexion with Mr. Corbett's map: Mr. S. H. Oldham (1*l.* 1s.) For the best design for window and balcony (junior class of design): Mr. C. Norman Taylor (10s. 6d.).—Mr. A. E. Corbett read a paper the same evening on "Modern Domestic Architecture," which was illustrated by means of lantern slides. He said most architects would agree that the undoubted advance of late years in the art of architecture had been more marked in domestic architecture than in any other branch. There were doubtless many reasons for this, and one of the chief reasons appeared to be due to a feeling that modern architecture must be founded more on sound and straightforward construction and the suitable treatment of materials than on the forms of buildings erected to fulfil the requirements of some bygone century, although careful study of these old buildings is a necessity to every architect. Noting various points as to the choice of materials and methods of construction, stress was laid on the advantages of solid construction of floors, etc., and detail given of some varieties of solid concrete or wooden floors. A double cavity wall was mentioned as probably having some advantages. Speaking of various treatments of wall surfaces, half-timber work, when used merely as a casing in front of a brick wall, was condemned as being a useless, and more or less perishable, deception. The aspect and planning of the chief rooms and of the house as a whole were briefly commented on and illustrated by examples of plans by Mr. Norman Shaw and others. Referring to the external treatment, it was insisted that the scheme must be mentally realised as a combination of materials of certain colours and textures, not merely as a pleasing arrangement of lines on paper, and that local material should generally be preferred. While moulded brick is a useful material, terra-cotta was thought to be quite unsuitable for country houses. The remainder of the paper consisted of comments on lantern slides, showing over fifty views and plans of good modern domestic work by leading architects.—After a few words by Mr. J. W. Beaumont, the President, a vote of thanks to the lecturer was proposed by Mr. W. A. Royle, and seconded by Mr. J. S. Hodgson.

Sheffield Society of Architects.—On the 12th inst. Mr. Hugh Stannus gave an address before members of the Sheffield Society of Architects and Surveyors. The occasion was the ordinary monthly meeting of the Society, which was held in the Lecture Hall of the Literary and Philosophical Society's rooms in Leopold-street. Mr. T. Winder took the chair. Mr. Stannus entitled his address "Architectural Education." He remarked that it was a very good beginning for a man to have tried his hand at all three styles, the old Classical, the Mediæval, the Renaissance, in addition to the modern. A good knowledge of German would be found helpful, especially in the mastery of text-books, and some idea of legal work would be sure to prove useful. A budding architect should also keep up his literary knowledge in order to be able to submit a lucid report to any public body. Mr. Stannus went on to advocate that a professorship of architecture and of architectural science should be created in Sheffield in connexion with the establishments of higher education. Such a professor ought to be responsible for the teaching of architecture and should have a proper status among his colleagues, the other professors, and amongst his fellow citizens. He would give lectures not only to those who were going to be architects, but also to those who were going to be their clients. By that means the general body of people would realise that architecture had evolved through the centuries without a break. The people would then realise that the work of an architect was not merely the designing of mouldings or the arranging of extra quantities to a builder.—A discussion followed, and on the motion of Mr. E. M. Gibbs, seconded by Principal Hicks, and supported by others, a vote of thanks was accorded to the lecturer.

Northern Architectural Association.—The opening meeting of the winter session of the Northern Architectural Association was held on the 11th inst. at 36, Northumberland-street, Newcastle. The President (Mr. J. Walton Taylor, F.R.I.B.A.) occupied the chair, and in his address he said they were met to inaugurate the forty-fourth session of the Association. The thought uppermost in their minds would doubtless be the generous gift of 1,500*l.* by their old friend, Mr. Wm. Glover, a past President of the Association. The interest would be devoted to the library, to providing lectures or other educational facilities, and to instituting a travelling studentship, with medals and prizes, which the Council had suggested should be named after the donor. Of the sum, 500*l.* had been set apart by Mr. Glover as the nucleus for a permanent building for the Association. It had been hinted by some of the senior members that the main object for which the Association was formed in 1858 had been somewhat lost sight of in the social efforts which had been made to interest and assist the younger members. The Association, he would remind them, was formed to promote union amongst its members, the elevation of the profession of architecture, the establishment of uniformity in practice, and the general advancement of the art and science of architecture. They would agree with him that if an association was to be successful, its activities must not be too much confined to one section only, but must be representative of all the various interests and agencies. If more attention had been given to the younger members of late years than formerly, the result would prove the wisdom of the course taken. He appealed to his older brethren to support the Council and himself in their honest endeavour to further the interests of every department of their work, for the seniors as well as for the students, and to make the Association a greater means of usefulness than it had ever been before. This year the Council of the R.I.B.A. had made a departure which was of the greatest importance to the profession. He referred to the question of the education of architects and the conference of the allied presidents held in London, adding that he was hopeful that at no distant date a chair of architecture would be established at the Durham College of Science, which, in a large association such as this, ought to be self-supporting. This would be one of the first subjects to be considered by the Council during the coming session. With regard to registration, the allied presidents were in favour of it, but thought the Institute was the proper body to take the subject up. The past year, the President continued, had been one of great activity in the building world. There was every indication of a falling off in the erection of large undertakings, whilst speculative building was practically at a standstill. It was interesting to compare the old maps of Newcastle, prepared by Mr. Oliver (father of the late Mr. Thomas Oliver, F.R.I.B.A.) with the most recent surveys. They then realised the vast development which had taken place. Pleasure gardens and country walks of the olden time were now covered with streets, so that the neighbouring villages were now practically part of Newcastle. Should the proposed extension of the city boundaries be carried out, the municipal area would be increased by 11,624 acres, and the total area of Newcastle would be 16,979 acres, with a population of about 278,665. The greatest transition in Newcastle took place about seventy years ago, when the late Mr. Richard Grainger secured Anderson-place and grounds and the nuns' gardens and fields, and had the ground cleared and laid out into wide thoroughfares. The President exhibited a plan and isometrical view, prepared by Mr. T. Sopwith in 1834, which showed the original scheme. He also reproduced, from the plan, a description of the proposed new streets and market. These showed how closely the first ideas had been adhered to. Having described the thoroughfares, the President said, although a great deal of the credit was due to Mr. Grainger and his legal adviser, Mr. John Clayton, he should not overlook the important part which their first president (Mr. John Dobson), Messrs. J. and G. Green, Mr. Wardle, and others took in designing the handsome street frontages. It was to be regretted that there had been so little recognition of these pioneers of architecture. Something should be done by this Association to keep their names green. Whether it would be possible, in the near future, to realise Mr. Glover's cherished wish of securing a permanent home for the Association it was difficult to say. If that were done it would not be difficult to have an exhibition of the works carried out by those men, and thus form a museum of art. Failing that, it might be possible to secure a corner in the new Laing Art Gallery to be known as the architectural section. Although they might justly be proud of their principal streets, he was afraid they could not be of their northern suburbs. Architects were often censured for the state of affairs which prevailed, and were even held responsible for the inferior class of houses. He attributed the evil to greed for gain. Instead of the entire district being in the hands of one public-spirited owner, it was bought up in sections by syndicates, who competed against each other for the largest return for their investments. He pointed to what was being done by other towns in creating fine suburbs, with wide streets and avenues of trees and attractive detached houses standing in the midst of well-planted gardens; and declared that our public bodies should do something to prevent these self-centred vested interests, and

formulate a well thought out scheme for the development of all new districts. Turning to the housing problem, he said the subject had been taken up at different times by philanthropists, budding politicians, and social reformers, but, so far as he was aware, no society of architects had ever dealt with it in a practical way. They might claim to know something of the difficulties. Some of the social reformers had advocated costly schemes for pulling down large areas of slum property and building palatial blocks of dwellings at the public expense. Others had visions of transporting the dwellers of slumland into the suburbs and forming a colony there on the model of Bourneville, near Birmingham, Saltaire in Yorkshire, or Port Sunlight. They might take it that people of this class did not like the restraint and order inseparable from industrial buildings. Moreover, the high buildings constructed of fireproof materials could not be erected under the local by-laws and yield a fair return on the capital. The President showed also how men preferred being near their work, and expressed approval of the action of the Newcastle Corporation in erecting workmen's dwellings on the line of the tram route. The quick and frequent electric tram and train service promised, he added, to be a solution, to a great extent, of the housing problem.—Colonel Haswell proposed, and Mr. Jas. Garry (Hartlepool) seconded, a vote of thanks to Mr. Glover for his gift of 1,500*l.* (Consols) to the Association.—The resolution was carried with acclamation.—Mr. Charlewood proposed, and Mr. C. S. Errington seconded, a vote of thanks to the President, which was heartily accorded and duly acknowledged.

Edinburgh Architectural Association.—At a recent meeting of this Association, Mr. J. A. Arnott in the chair, Mr. Ramsay Traquair delivered to the "Associates'" Section a lecture under the title "Notes on Later Scotch Gothic." The lecturer traced shortly the rise and progress of Gothic work in Scotland, pointing out the manner in which the earlier English work was replaced by a mixed school influenced both from France and England. Great stress was laid on the need of studying the simpler examples of the later style as a base on which to raise new ideas. A number of characteristic buildings of the Later Decorated period were then described more fully. The paper was illustrated by lantern slides.

Architectural Association of Ireland.—A visit by members of this Association was paid recently to the new nurses' home in connexion with Cork-street Hospital. The visitors were received by the architect to the building, Mr. W. M. Mitchell, R.H.A., who, having exhibited the drawings and made a brief explanatory statement, afterwards conducted them through the building, pointing out the various objects of interest therein. The new home is very advantageously situated opposite the hospital, with Cork-street intervening. The main front enjoys a sunny aspect, overlooking a lawn of considerable extent bordered by trees, which was formerly used as the burying ground of the Society of Friends. No interments, however, have taken place there for nearly half a century, and it will shortly be transformed into a garden for the rest and refreshment of the inmates after their duties at the hospital. Accommodation is provided in the building for about fifty nurses, each having a separate bedroom, while large, airy day-rooms occupy the ground story. The floors, partitions, etc., are fireproof throughout, and an external wrought-iron staircase is provided for emergencies. The entire building is heated by hot water, and electric lighting has been adopted. The sanitary wing, which is connected with the main building only by a corridor having cross ventilation, is fitted with the most approved type of baths, lavatory basins, etc. The building and sanitary contractors, respectively, are Messrs. H. and J. Martin, and Mr. H. MacGarvey, while Mr. Hynes acted as clerk of works.

Engineering Standards Committee.—The Engineering Standards Committee have appointed Messrs. Crosby Lockwood and Son, of 7, Stationers' Hall-court, E.C., as official publishers to the Committee. All the reports and specifications published by the Committee may be had from the official publishers to the Committee, or direct from the offices of the Committee, 28, Victoria-street, Westminster.

THE LONDON COUNTY COUNCIL.

The usual weekly meeting of the London County Council was held on Tuesday, in the County Hall, Spring Gardens, S.W., Lord Monkswell, Chairman, presiding.

Loans.—On the recommendation of the Finance Committee, it was agreed to lend Camberwell Borough Council 6,496*l.* for paving, etc., works; and Mile-end Old Town Guardians 1,000*l.* for poor-law purposes. Sanction was also given to Westminster City Council to a loan of 2,494*l.* for street improvement.

Tramways.—The following recommendations of the Highways Committee were agreed to after discussion:—

(*a*) That a special meeting be summoned to consider and decide whether the Council shall exercise its powers under Section 43 of the Tramways Act, 1870, in respect of the purchase of the undertaking authorised by the London Southern Tramways Act, 1882.

(*b*) That, with a view to enable the Council to decide whether or not it will give notice to purchase the undertaking of the London Southern Tramways Company under Section 43 of the Tramways Act, 1870, it be referred to the Highways and Improvements Committees to ascertain whether the local authorities concerned will agree (1) to consent to the adoption of the overhead system of electrical traction for the whole of the system with the exception of the lines in South Lambeth-road, (2) to contribute one-third of the net cost of the necessary street widenings for the reconstruction of the tramways in that manner, and (3) to consent to the doubling of the tramways where decided upon.

The following recommendations were also agreed to:—

That the estimate of 90,000*l.*, submitted by the Finance Committee, be approved; and that expenditure on capital account not exceeding that amount be authorised for the purchase of the rails, and other track materials, required in connexion with the reconstruction, for electrical traction, of certain sections of the London County Council Tramways and of the Council's (Northern) Tramways, and for the construction, for the same method of traction, of certain authorised tramways.

That the estimate of 13,850*l.*, submitted by the Finance Committee, be approved; and that the expenditure on capital account of sums not exceeding that amount in all, be authorised, in connexion with the extension, under the powers conferred by the London County Council (Tramways and Improvements) Act, 1901, of the existing tramways in Tooting High-street, along portions of that thoroughfare and Defoe-road, and the construction of new termini in those thoroughfares.

That expenditure be sanctioned of a sum not exceeding 2,650*l.* in respect of the construction for the underground conduit system of electrical traction, of a portion of the tramways, authorised by the London County Tramways Act, 1900, along St. John-street and St. John-street-road.

That the offer of Messrs. J. G. White and Co., Ltd., to carry out the work referred to in the foregoing resolution, on a schedule of prices 15 per cent. in excess of those under the contract entered into between them and the Council for the reconstruction of the New-cross and Greenwich, etc., tramways pursuant to the resolution of December 9, 1902 (p. 1880), be accepted.

That the Highways Committee be authorised to make arrangements for the purchase of the rails and other track materials required for the portion of the tramways in St. John-street and St. John-street-road, referred to in the foregoing resolutions.

Certificates as to Re-naming of Streets and Re-numbering of Houses.—The Historical Records and Buildings Committee reported as follows, the recommendation being agreed to:

Section 38 of the London Building Act, 1894, provides that "the Council shall keep a register of all alterations made by them in the names of streets and in the numbers of the houses therein . . . It shall be lawful for any person to inspect such register and to take a copy of any portion thereof upon payment of such reasonable fee as the Council may from time to time determine." The following is an extract from the existing regulations of the Council in relation to the fees to be charged:—

"Any person interested in property affected by any order of the Council for renaming streets or renumbering houses, is permitted, on application, to make a copy of the order and a tracing of the plan attached thereto; or a certified copy of the order and plan may be furnished to him on his paying the cost of making the same. A fee of 1*s.* is to be charged to all persons seeking information involving a reference to the records with regard to orders for renaming streets or renumbering houses. If a copy of an order and plan be required, there will be a further fee of not less than 1*s.* 6*d.* A more extended plan may be obtained for a larger payment. Copies of orders and plans are to be made in the Superintending Architect's department."

No scale has been fixed as to the amount of the "larger payment" for more extended plans, but, in practice, fees have been charged varying from 1*s.* 6*d.* for a copy of an order without a plan, or with a plan showing not more than three houses, to 8*s.* for a copy of an order with a plan showing from forty-six to fifty houses. This arrangement has worked satisfactorily, and we think that it should be formally approved by the Council, and at the same time, be extended so as to include provision for a plan showing up to 300 houses. We recommend that the approval of the Council be given to the scale of fees, set out in the schedule to this report, to be charged for the provision of copies of orders, with or without plans, in relation to the renaming of streets and renumbering of houses.

[The following is the schedule referred to: Scale of fees to be charged for the provision, under Section 38 of the London Building Act, 1894, of copies of orders, with or without plans, in relation to the renaming of streets and the renumbering of houses:

		£	s.	d.
For a copy of an order without a plan, or with a plan showing 3 houses.....		0	1	6
For a copy of an order with a plan showing...	4 or 5 houses	0	2	0
	6 or 7 houses	0	2	6
	8 or 9 houses	0	3	0
	10 or 11 houses	0	3	6
	12 or 13 houses	0	4	0
	14 or 15 houses	0	4	6
	16 to 20 houses	0	5	0
	21 to 25 houses	0	5	6
	26 to 30 houses	0	6	0
	31 to 35 houses	0	6	6
	36 to 40 houses	0	7	0
	41 to 45 houses	0	7	6
	46 to 50 houses	0	8	0
	51 to 75 houses	0	10	6
	76 to 100 houses	0	12	6
	101 to 150 houses	0	15	0
	151 to 200 houses	0	17	6
	201 to 300 houses	1	0	0]

Indication of Houses of Historical Interest.—The same Committee recommended, and it was agreed:—

That the commemoration, by means of the erection of memorial tablets, of the following houses of historical interest in London, viz.—(1) No. 56, Devonshire-street, Portland-place (Sir John Herschel); (2) No. 1, Devonshire-terrace, Portland-place (Charles Dickens); and (3) No. 12, Clarges-street, Piccadilly (Edmund Kean), be approved.

Housing.—The Housing of the Working Classes Committee reported as follows:—

"In accordance with practice the housing manager has submitted to us a report of the work of his department during the year ended March 31, 1903. The report is satisfactory since it shows that, notwithstanding the continued increase in the rates, which now amount to 19.46 per cent. of the outgoings, and the heavy income-tax for the year, the percentage of outgoings over the whole of the Council's dwellings is only 44.45, or .97 per cent. less than last year.

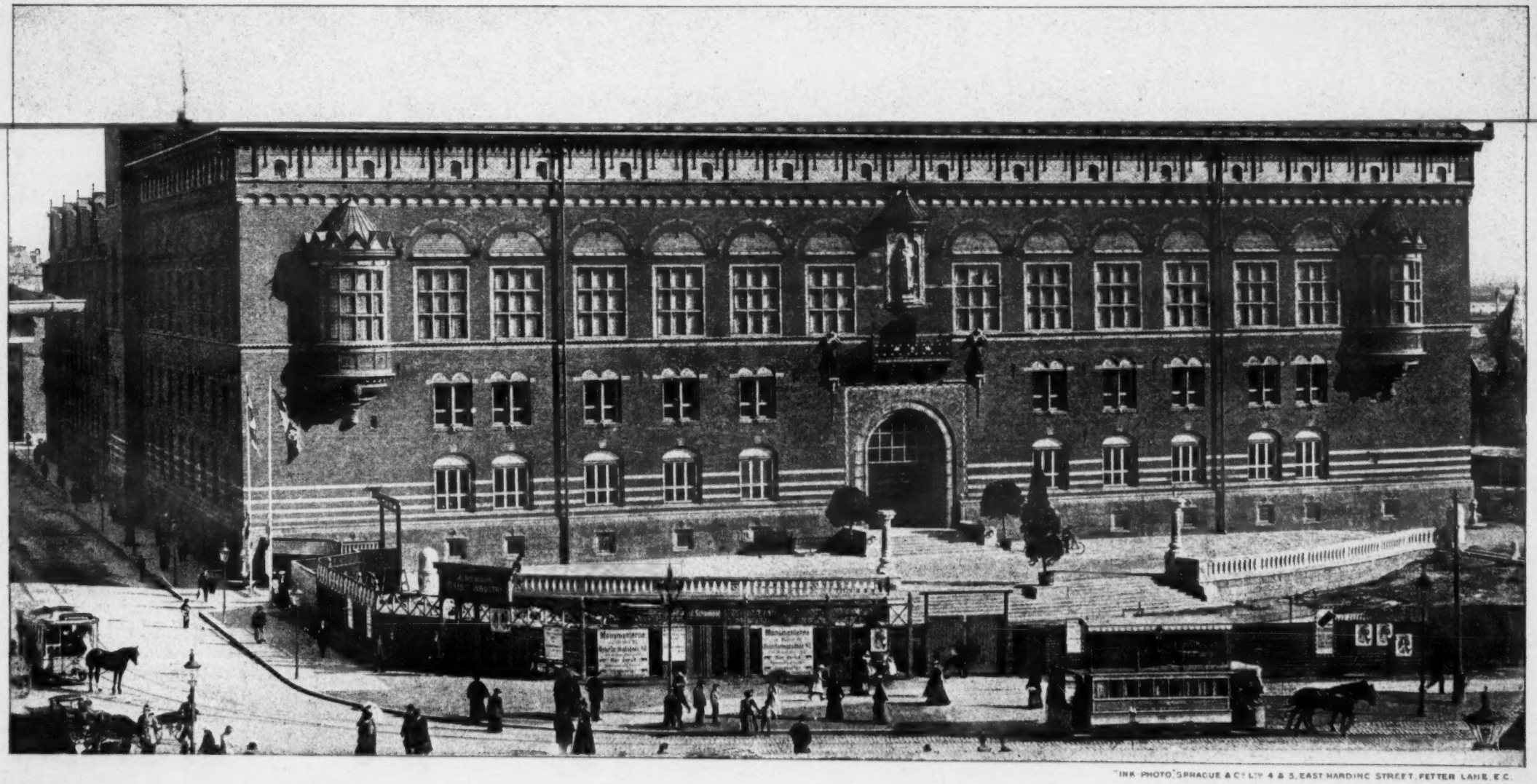
The total loss by empties, including the rents lost at the opening of new dwellings, has amounted to 2.7 per cent. of the total rents receivable, and the rent written off as irrecoverable amounted to only 2*s.* 11*d.* per cent. of the rent in charge, which is comparable with 10*s.* per cent. written off in 1901-2. The usual annual census for the Council's dwellings was taken in December, 1902, and showed that 9,480 rooms were occupied by 13,818 persons, or an average of 1.45 persons per room, and that the number of cases of overcrowding, which were immediately remedied, in most cases by transfer to larger tenements in the Council's dwellings, was only 15. . . ."

Improvements.—The following recommendations of the Improvements Committee were agreed to:—

That the estimate of 3,930*l.* submitted by the Finance Committee be approved; that the Improvements Committee be authorised to take all necessary steps for the widening to 54 ft. of New King's-road, Fulham, at the Draycott-lodge site, and at Nos. 182, 184, and Elysium-cottage.

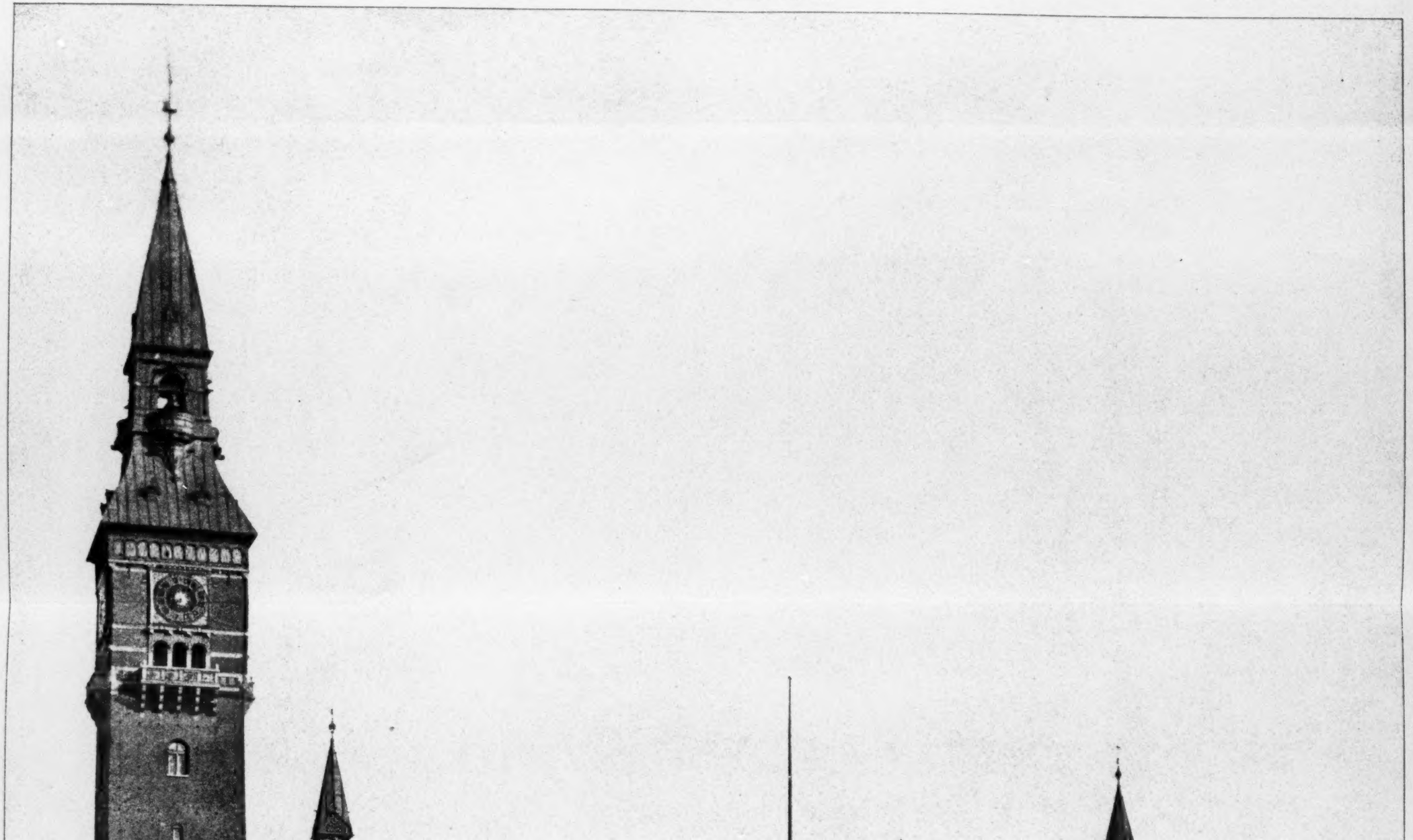
That the statutory consent of the Council be given to the extension of the widening of Castle-alley, Whitechapel, proposed to be undertaken by the Metropolitan Borough Council of Stepney, in accordance with the plan presented to the Improvements Committee on July 22, 1903, and that the Borough Council be informed that the Council is not prepared to make any further contribution towards the cost of the improvement.

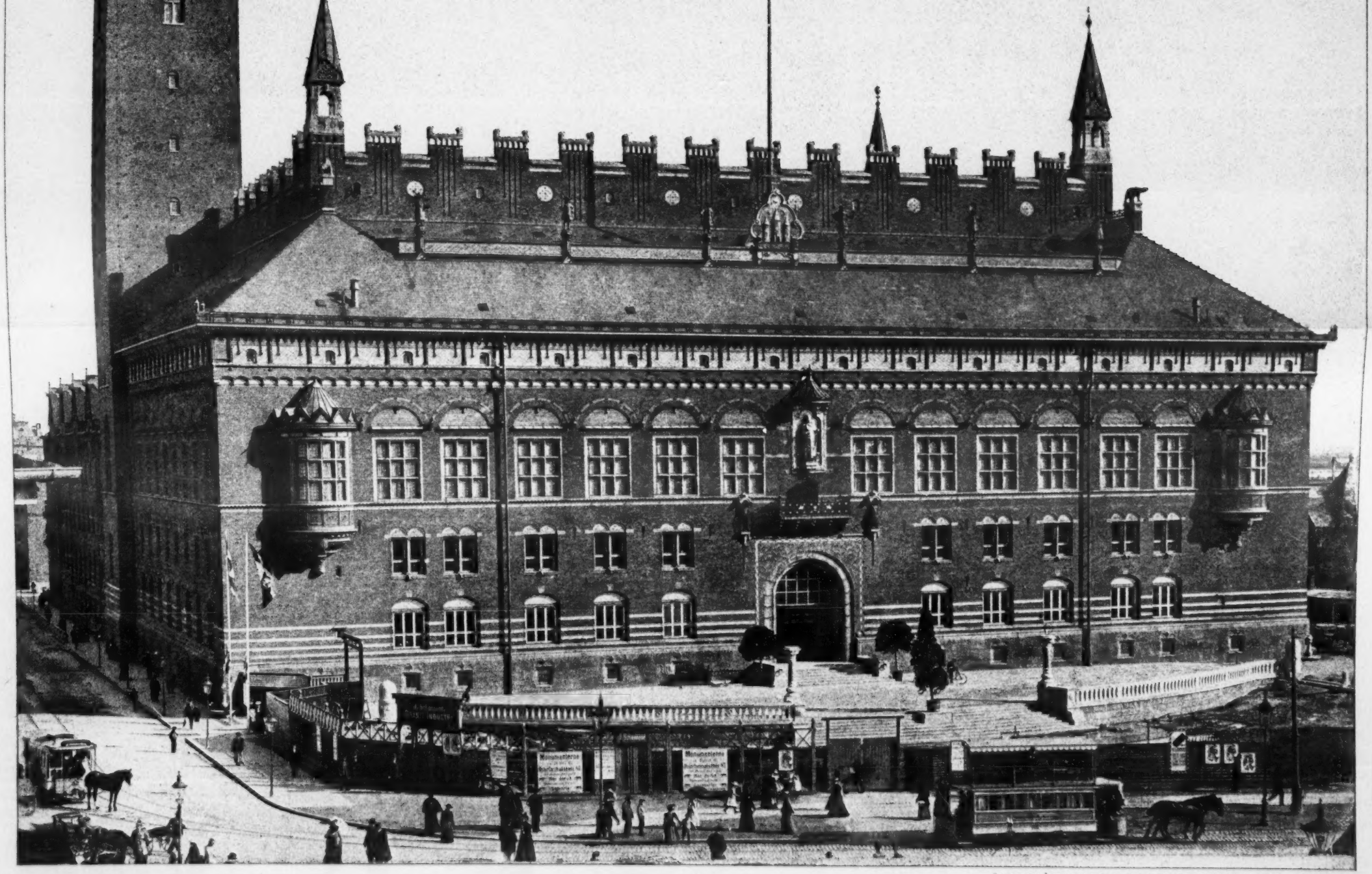
That the offer of Messrs. J. G. White and Co.,



"INK-PHOTO" SPRAGUE & Co LTD 4 & 5, EAST HARDING STREET, FETTER LANE, E.C.

TOWN HALL, COPENHAGEN.—Herr Martin Nyrop, Architect.
GENERAL VIEW.





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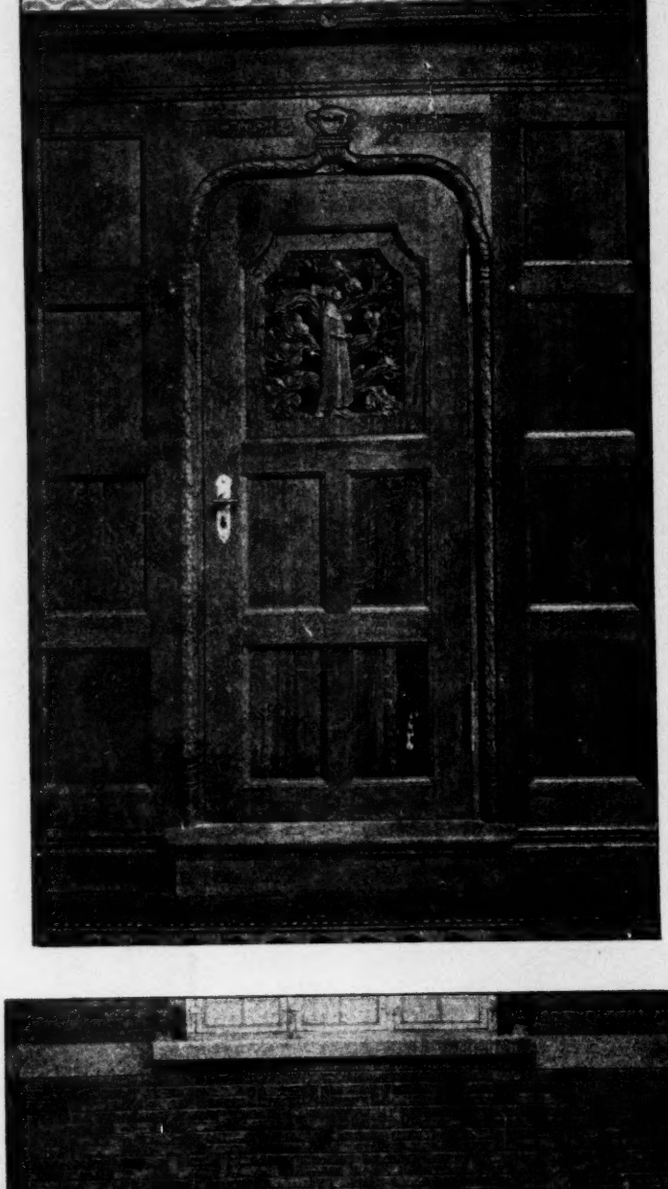

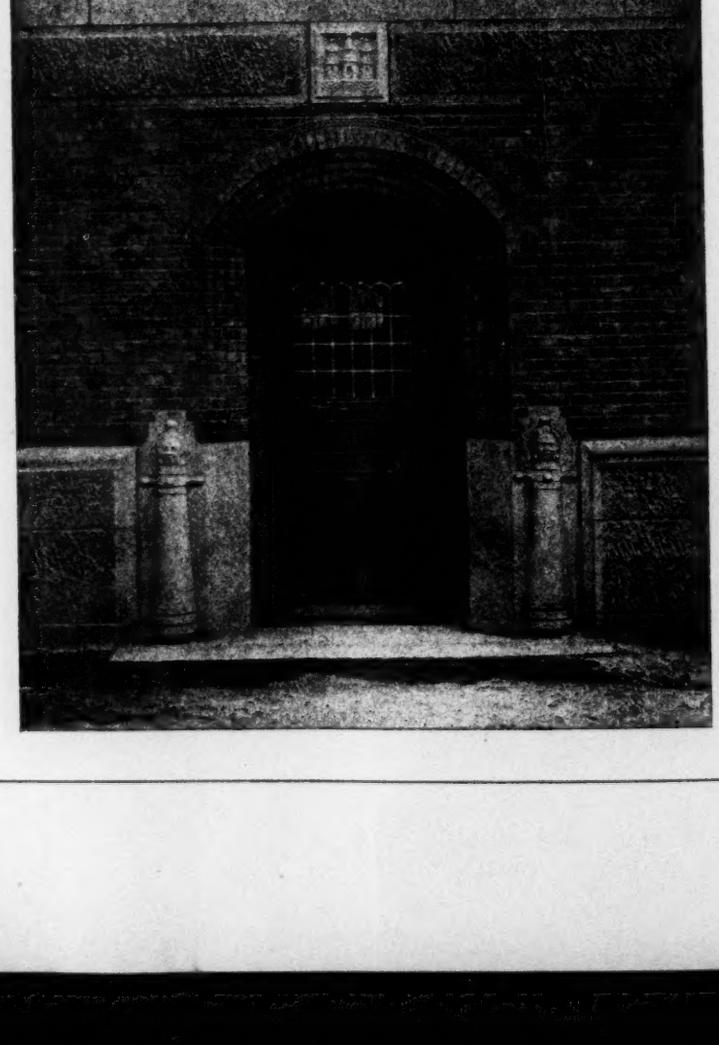

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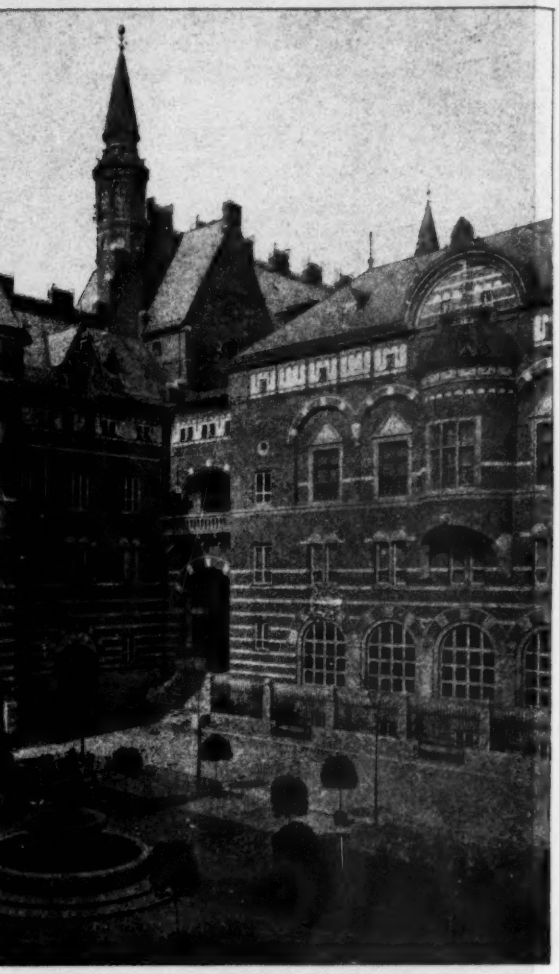

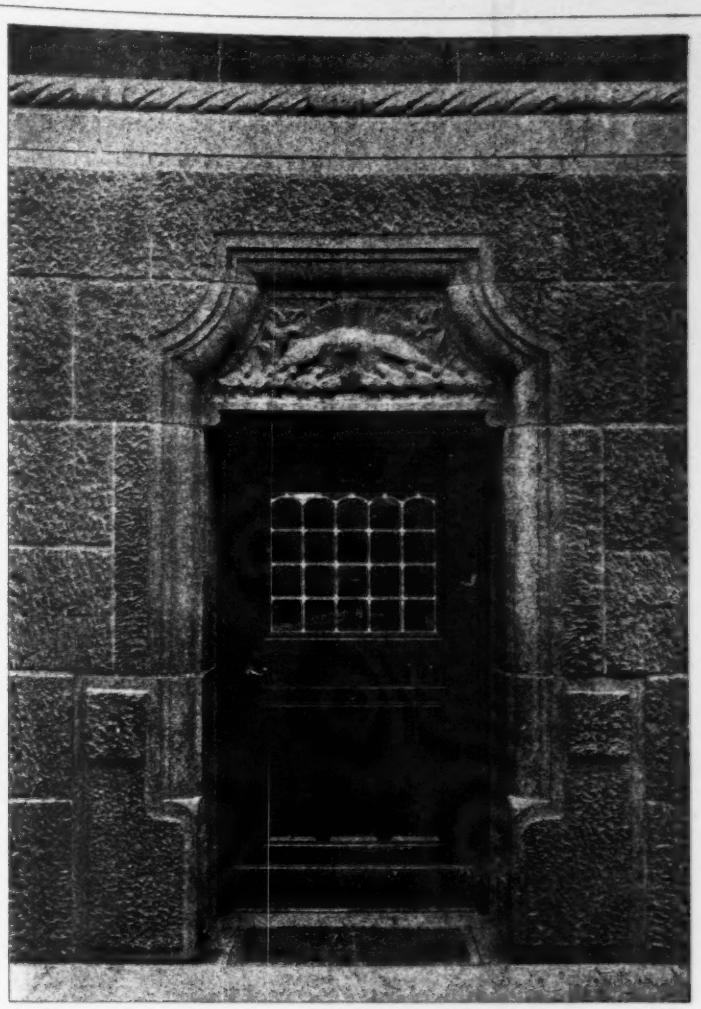

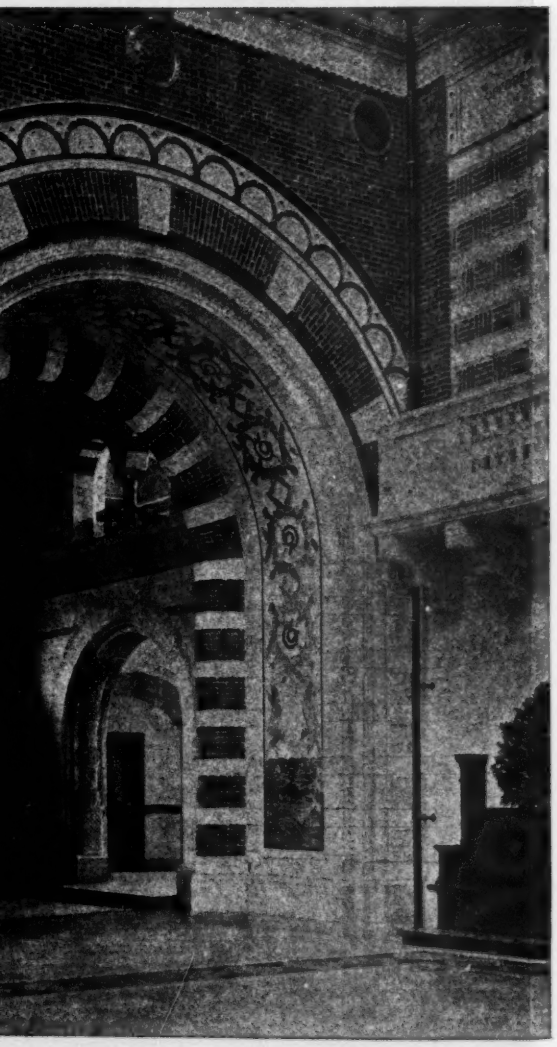

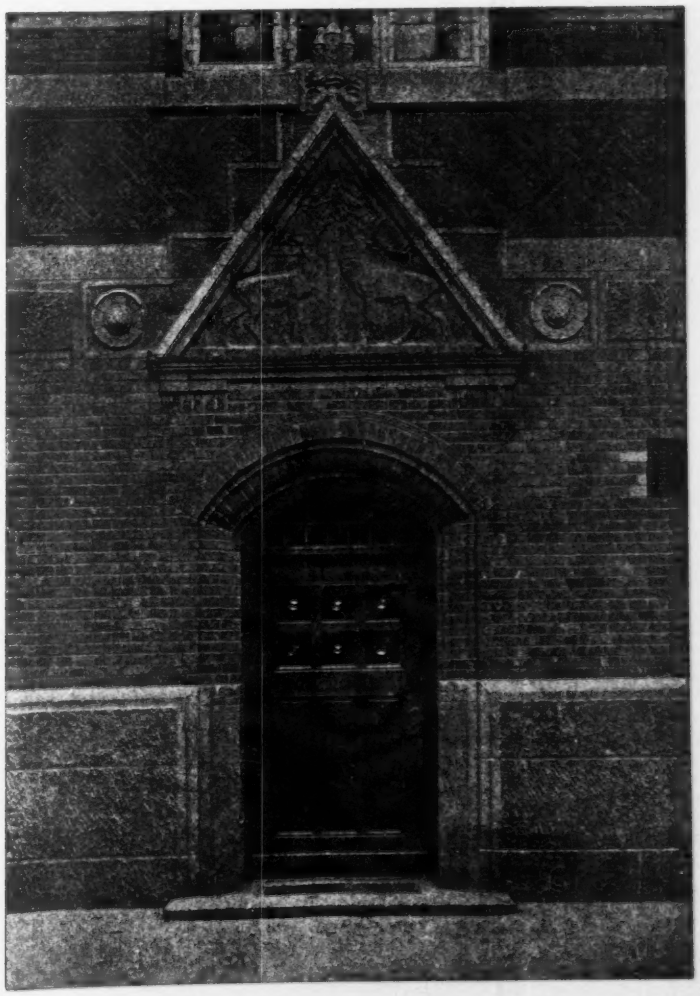

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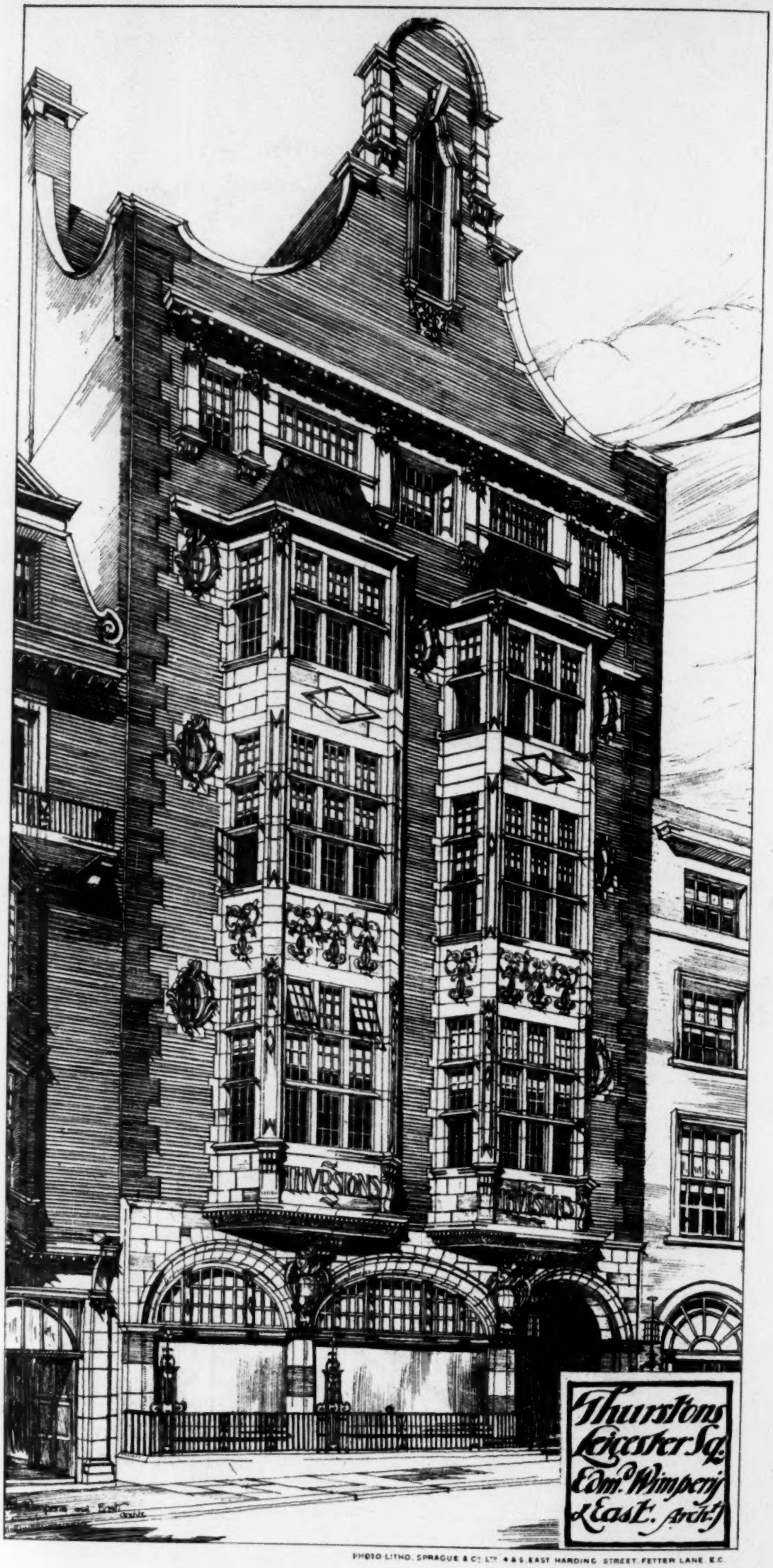
OPENHAGEN.—HERR MARTIN NYROP, ARCHITECT,
VARIOUS DETAILS.



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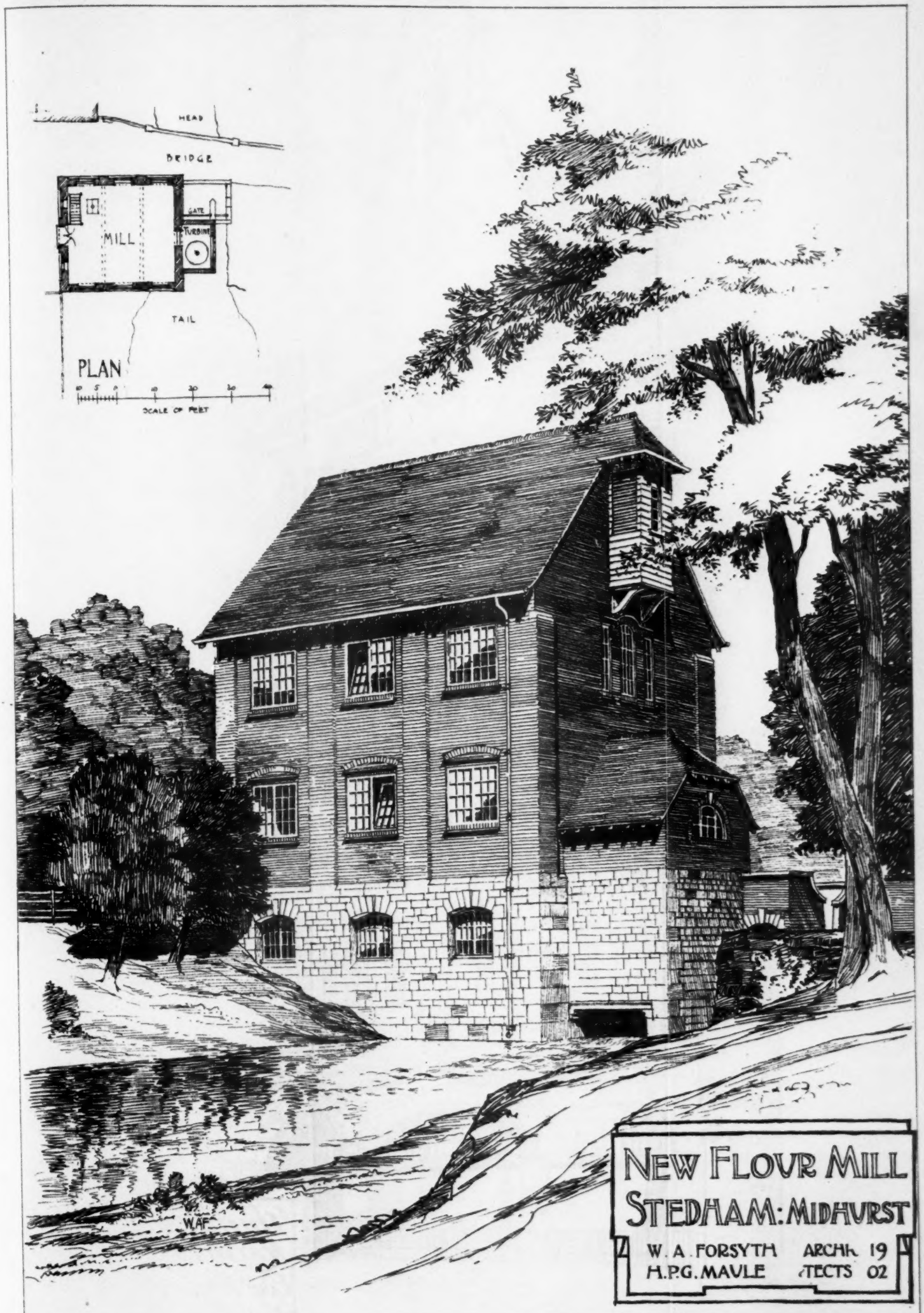

NEW FLOUR MILL
STEDHAM: MIDHURST

W. A. FORSYTH ARCHITECTS
H.P.G. MAULE 1902

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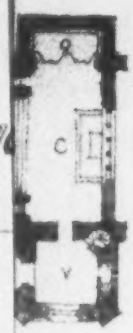
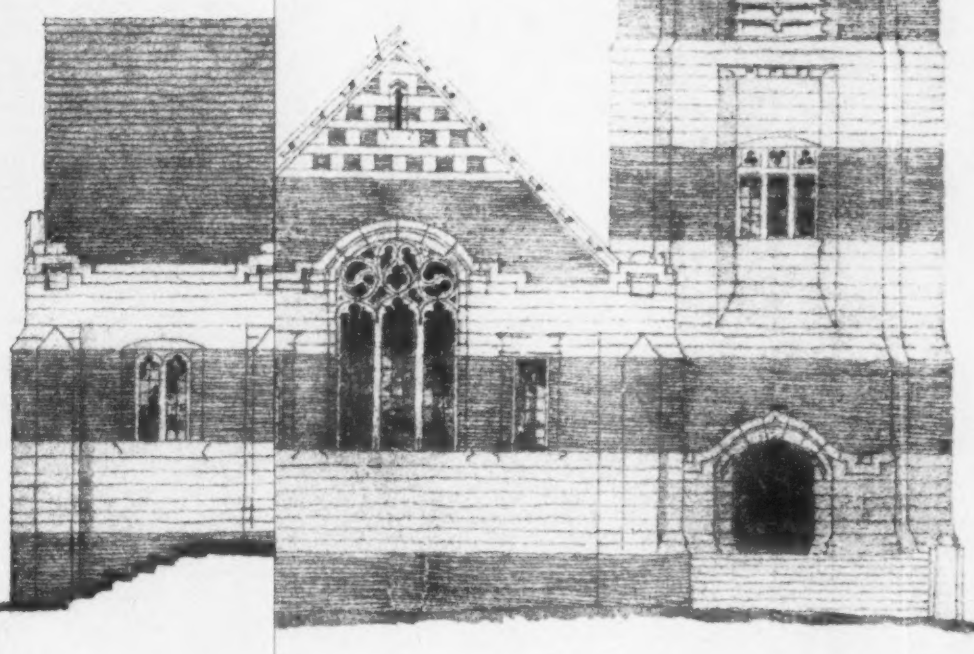
A · VILLAGE CHURCH

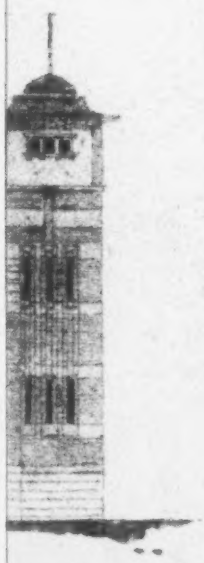
SCALE 0 5 10





· WEST · ELEVATION ·

G. L. Morris.



G. L. Morris.

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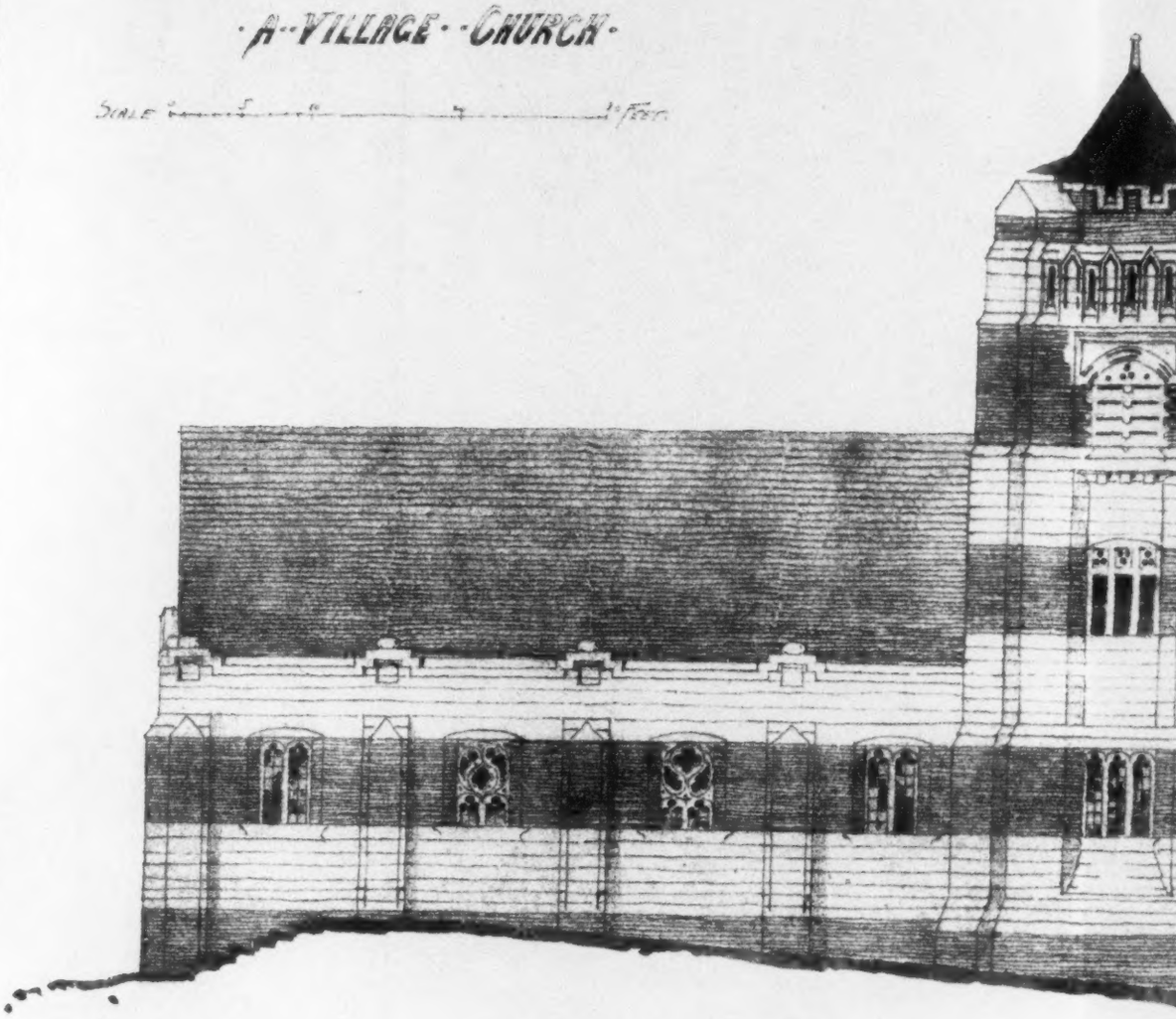
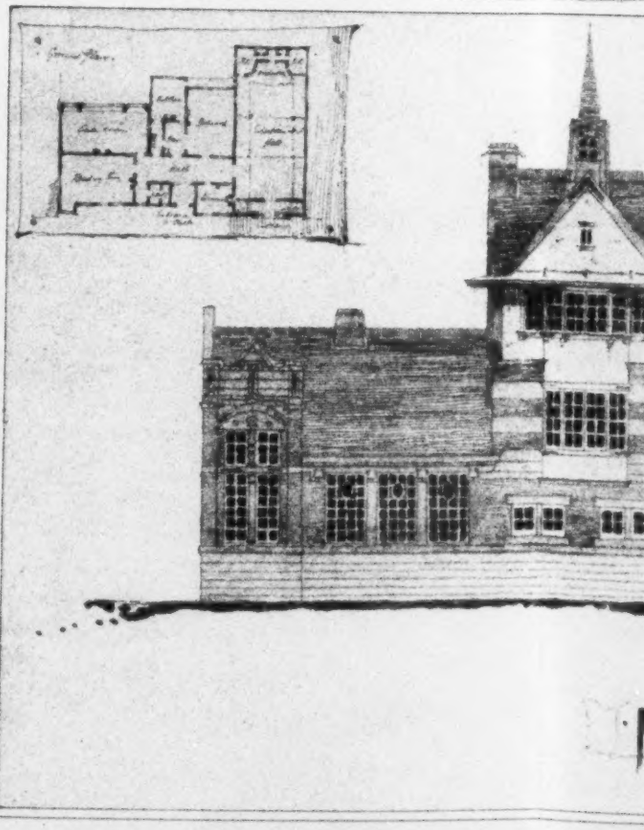
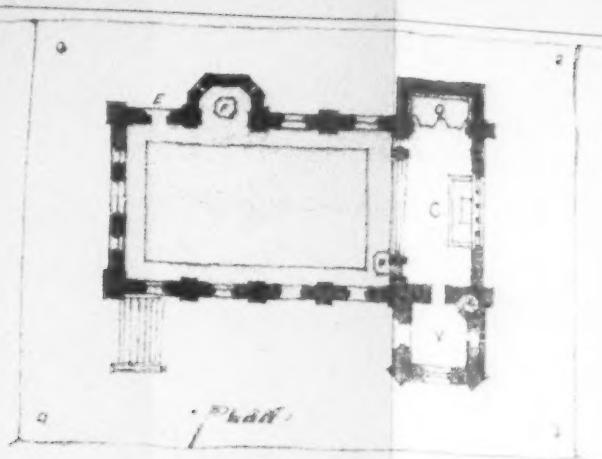
A VILLAGE CHURCH

SCALE 1 inch = 8 feet

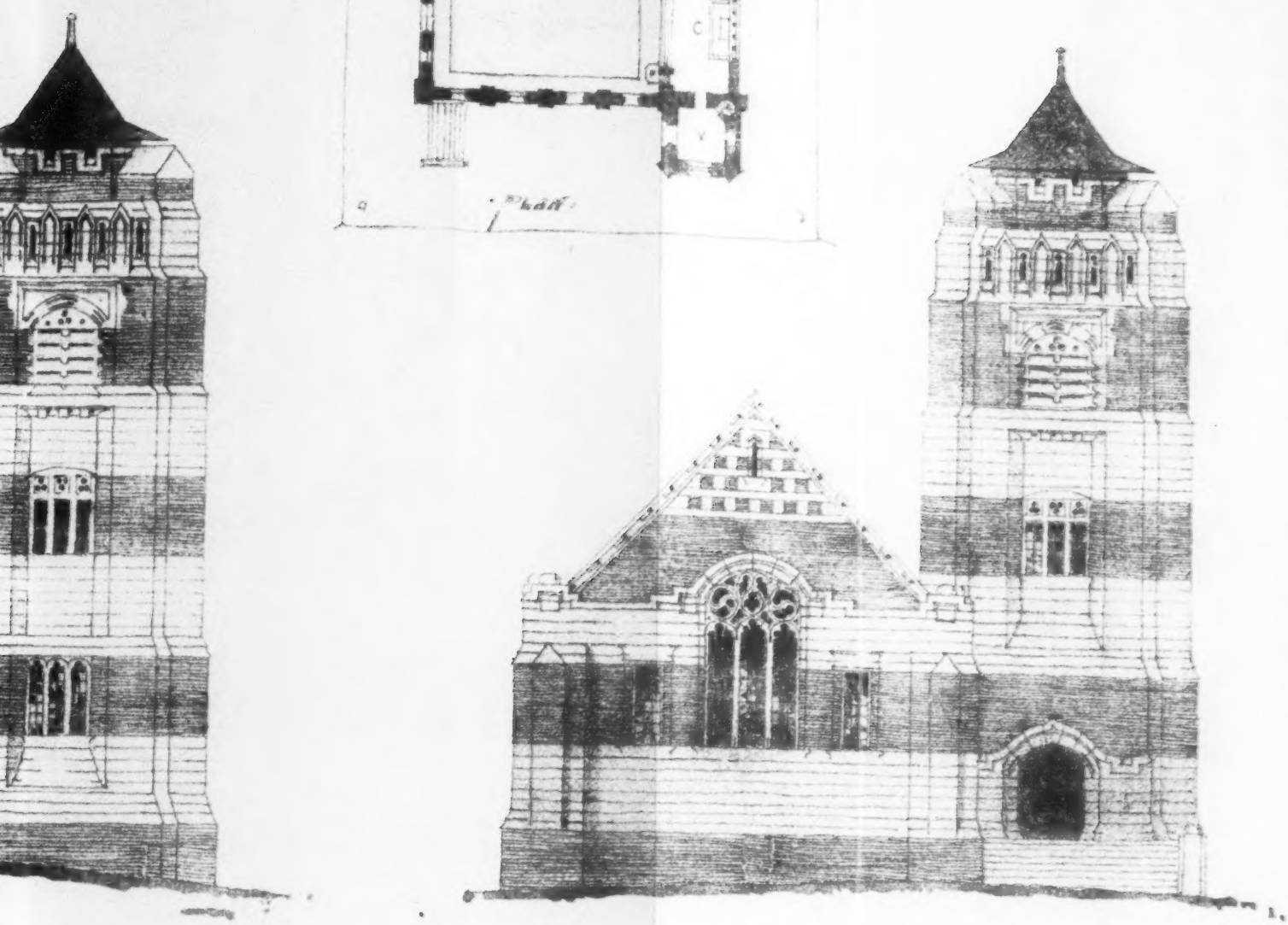


NORTH ELEVATION





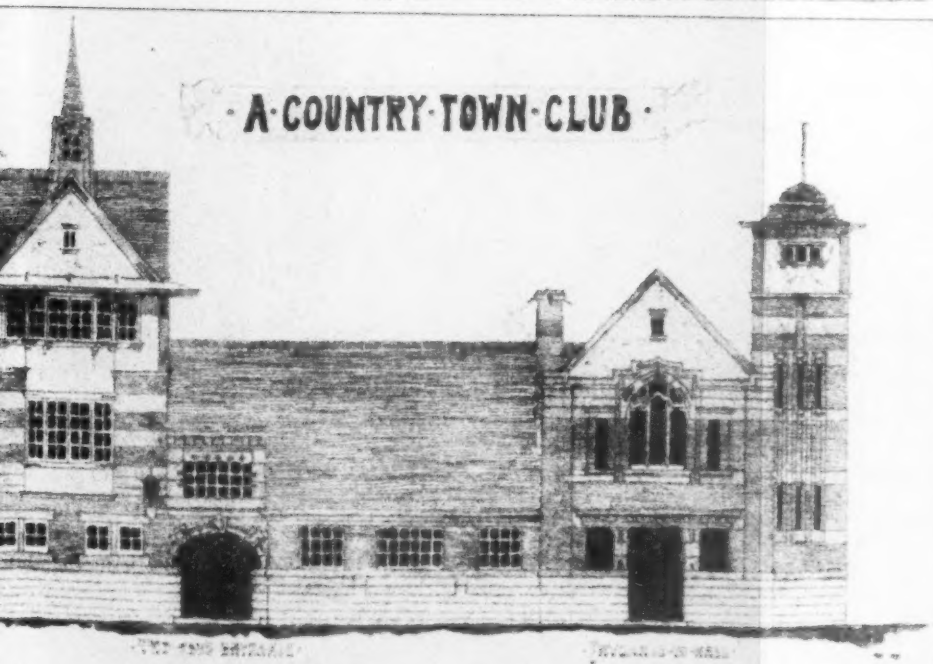
PLAN.



WEST ELEVATION.

G. L. Morris.

A COUNTRY TOWN CLUB.



FRONT ELEVATION.

G. L. Morris.

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Ltd., to carry out for the sum of 3,111*l.*, and in accordance with the working drawings, bills of quantities and specification prepared by the Council's Engineer, the paving and other works connected with the widening of St. John-street, be accepted.

Richmond Hill View.—The deed of covenant between the Council, the Richmond Corporation, and Sir John Whittaker Ellis to restrict building on land within the view from Richmond Hill was approved.

Building Conditions.—The Report of the Corporate Property, Charities, and Endowments Committee contained the following:—

"It will be remembered that at the auction held on October 13 last certain valuable plots in the Strand, Kingsway, and Aldwych were offered on lease, but no bids for them were made, and it is in consequence of this result that we have carefully considered whether the building conditions relating to the leasing of the Council's surplus land acquired in connexion with various improvement schemes should be modified, with a view to the letting of the land more expeditiously. It has been suggested that it is not the obligation to spend money upon a building or the condition as to the approval of elevation and design that causes would-be bidders to hold back, but the fear of subsequent complications and delay, and the opinion has been expressed that where such large sums of money are at stake a reference to an independent arbitrator of standing should be allowed. As the conditions stand at present there is no provision made for arbitration. No. 13 of the conditions provides that in the event of any dispute arising between the Council and the lessee in connexion with the erection of the buildings, such dispute is to be settled by the Council's architect, whose decision shall be final. The point, therefore, which we have had chiefly to consider is whether any modification of the condition in question should be made so as to provide for an appeal to an independent arbitrator in the event of any failure of agreement between the Council and the lessee. We have made inquiries as to the practice which obtains in regard to the letting of land on the estates of the large ground owners of London, and we are advised that the conditions in use on these estates are generally more onerous than those imposed by the Council, and that no provision for arbitration is made in the conditions. It does not appear that the Council's conditions have hitherto restricted building operations on its land. From figures which have been submitted to us it appears that the building work on the Council's freehold has increased nearly sevenfold since the year 1897, and we are of opinion that the inability to dispose of more surplus land is not due to the conditions, which have been practically the same for many years past. We are further informed that while the standard of work insisted upon is sufficient for its purpose, the Council does not press this beyond what is believed to be consistent with the circumstances of the case. That the tendency is towards leniency rather than the strict letter of the conditions is in a measure confirmed by the large increase in the building work on the Council's land. Having regard to all the circumstances, we do not think that the Council would be well advised to make any alterations in its building conditions, and we are of opinion that, although there were no bidders for the plots of land in connexion with the Holborn to Strand improvement at the last auction, the Council will not experience any difficulty in eventually disposing of the plots under the existing conditions. We may remind the Council that on May 26 last, when reporting on the question of the elevation of the buildings to front on the Strand, Aldwych, and Kingsway, we recommended that, in the event of disagreement, the lessee should be allowed to consult with certain architects with a view to his submitting an amended design, and that should the amended design not be approved, the designs should be submitted to the Senior Architectural Royal Academician for his decision. The Council did not adopt our recommendation, but decided that the design should be such 'as the Council should approve as worthy of the position,' thus, in effect, allowing no appeal against its decision. We have given instructions for a copy of the Council's building conditions to be supplied to each member of the Council, and we report the facts for the information of the Council."

The Chairman of the Committee (Mr. Mullins) asked that the report might be withdrawn.

Mr. Goodrich asked whether it was a fact or not that the Valuer had recommended the inclusion in the Building Conditions of a clause to refer disputes to an independent arbitrator?

Mr. Mullins said he preferred to defer any explanation until another report was submitted.

The subject then dropped.

Land and Houses in London.—The following motion by Mr. Leon was agreed to, i.e.:—"That it be an instruction to the Local Government and Taxation Committee to prepare a return to show separately and for a series of years the net value of (*a*) land and (*b*) houses in the County of London (in continuation of a similar return presented by the Council in 1897 to the Royal Commission on Local Taxation), and also the area of building land unbuilt on."

The Council then adjourned.

THE QUANTITY SURVEYORS' ASSOCIATION.

The first general meeting of this Association was held on Wednesday, the 18th inst., at the Holborn Restaurant. There was a numerous attendance of both London and provincial members of the profession, and Mr. W. Hoffman Wood, of Leeds, was voted to the chair.

The proposed memorandum of association, having been read by the Hon. Secretary, Mr. F. B. Hollis, was unanimously adopted by the meeting. The following officers were then elected:—President, Mr. Walter Lawrance, F.S.I.; vice-president (London), A. J. Gate, F.S.I.; vice-president (provincial), W. Hoffman Wood, Leeds; and a council of twelve, consisting of the following eight London and four provincial members:—London—W. Lawrance, F.S.I.; A. G. Cross, F.S.I.; A. J. Gate, F.S.I.; W. R. Hood, F.S.I.; R. L. Curtis; H. England; H. W. Crickmay; and F. B. Hollis, who was elected hon. secretary and treasurer. Provincial—H. Curtis-Card, F.S.I., of Lewes; H. L. Beckwith, F.S.I., of Liverpool; R. J. Tollit, of Cambridge; W. Hoffman Wood, of Leeds.

The Hon. Secretary, Mr. F. B. Hollis, 17, Bedford-row, W.C., will be glad to receive further applications for membership or for particulars of the Association.

THE LONDON BUILDING ACT.

The Paddington Borough Council on Tuesday resolved to inform the London County Council that they were of opinion that the administration of the London Building Act and the exercise of the functions of the District Surveyor should be transferred to the Metropolitan City and Borough Councils. Also that, *inter alia*, the London Building Acts require amendment in the following particulars, viz.:—

Regulations for the pulling down of buildings towards the greater safety and convenience of the public.

Provisions for an increase in the minimum width of new streets in certain cases.

In default of (*b*), administration of Act as regards new streets by Borough Councils.

Incorporation of provisions as to new streets with Metropolis Management Acts instead of Building Acts.

Provision for compensation for land taken for widening streets where re-building operations are contemplated, and arrangements of the exercise by the road authority of a right of pre-emption.

In default of (*b*), naming and numbering streets generally by Borough Councils.

Similar regulations for the heights of buildings at whatever times the streets upon which they abut may have been laid out.

Increased heights of buildings permitted.

Removal of certain restrictions as to the heights of buildings where the latter will not be used for habitation.

Requirements governing all buildings in courts, whether or not used for habitation, due regard being given to precautions against fire.

Provision of parapets around all lofty buildings.

Fireproof roofs to all projecting one-story shops and lofty buildings. Modification of provisions relating to the fireproof construction of public buildings in certain cases.

In default of (*b*), control by Borough Councils alone of all vaults under streets.

Permission for the use of other materials than brick for staircases in public buildings.

Better regulation of oriels and bay windows.

Surrounding of vacant land by hoardings or fences.

Regulation of railway companies' combustible buildings.

Alterations of existing law as to temporary, special, and wooden structures and buildings.

Application of party wall regulations to the re-building of an existing external wall.

Revision of dangerous structures procedure.

Exemption from Act of buildings erected by Borough Councils.

Better description of mortar.

Modifications of law as to hollow walls in some cases.

An investigation of the County Council's power to vary and repeal, where necessary, by-laws made under the Building Act.

The Slate Trade.—The Blue Book on Mines and Quarries for 1902, just issued, shows a slight increase in the output of slate, which is, however, still 150,000 tons below that of 1898. The export trade shows an increase of nearly 24,000*l.* over previous year, and the trade generally is in a very healthy state. The Festiniog Quarry proprietors have decided to continue present prices for the coming year.

APPLICATIONS UNDER THE 1894 BUILDING ACT.

The London County Council at their meeting on Tuesday dealt with the following applications under the London Building Act, 1894. The names of applicants are given between parentheses:—

Kensington, North.—(*a*) That the resolution, reported to the Council on 6th October, consenting to the erection of a studio building at the rear of No. 16, Addison-road, North Kensington, in accordance with the application of Mr. H. Cayley on behalf of Mrs. Clarke, be rescinded.—Agreed.

(*b*) That the Council do not consent to the erection of a studio building at the rear of No. 16, Addison-road, North, Kensington, with the boundary fence at less than the prescribed distance from the centre of the roadway of Princes-place (Mr. H. Cayley).—Refused.

Lines of Frontage and Projections.

Lewisham.—The retention of porches to six houses on the south side of George-lane, Hithergreen, Lewisham, westward of the Fever Hospital (Messrs. Norfolk and Prior for Mr. C. C. Story).—Consent.

Fulham.—Buildings on the north-west side of Conan-street and south-west side of Edith-villas, Fulham, so far as relates to the erection of porches and oriel windows to such buildings (Mr. J. P. Flew, jun.).—Consent.

Fulham.—Buildings on the east side of Townmead-road, Fulham, so far as relates to an alteration in the position of one of the buildings (Mr. W. T. Hanman for Messrs. MacFarlane, Lang, and Co.).—Consent.

Hackney, Central.—A building on the site of No. 222, Mare-street, Hackney, to abut also upon Darnley-road (Messrs. Holman and Goodrham for the Royal London Friendly Society.).—Consent.

Hackney, North.—That the application of Mr. G. H. Paine for an extension of the periods within which the erection of eight houses with bay-windows on the east side of Upper Clapton-road, Hackney, between No. 174, Upper Clapton-road and Moresby-road, was required to be commenced and completed, be granted.—Agreed.

Hammersmith.—One-story shops in front of Nos. 350, 352, 354, and 356, King-street, Hammersmith (Messrs. B. T. and W. J. Flexman).—Consent.

Lewisham.—That the application of Mr. A. H. Kersey for an extension of the periods within which the erection of houses with bay-windows on the west side of Brockley-rise, Lewisham, was required to be commenced and completed be granted.—Agreed.

Westminster.—A church, with towers and porch upon the site of Nos. 18, 19, and 20, Montpelier-place, and Nos. 1, 2, and 3, Alfred-place, Westminster (Messrs. Boehmer and Gibbs for Baron Sir John H. W. Schröder).—Consent.

City of London.—A stone balcony over the entrance to No. 1, Old Broad-street, City (Mr. H. C. Clarke for the Indemnity Mutual Marine Assurance Company, Ltd.).—Refused.

Hackney, Central.—One-story additions at the rear of No. 44, Mortimer-road, Kingsland, to abut upon Downham-road (Mr. J. B. Watts).—Refused.

Hammersmith.—Two one-story shops at the rear of No. 24, Shepherd's-bush-green, Hammersmith, to abut upon Camden-gardens (Mr. F. A. Dawkins for Messrs. Kellett and Firth).—Refused.

Paddington, South.†—An iron and glass shelter in front of No. 49, Cambridge-street, Hyde-park (Messrs. Carr and Parr for Mr. R. Borer).—Refused.

Wandsworth.—A one-story addition to "Malet-lodge," No. 283, Upper Richmond-road, Putney, to abut also upon Marlborough-road (Mr. H. Brown for W. J. Mansell).—Refused.

Wandsworth.†—Buildings upon a site upon the western side of Streatham High-road, Wandsworth, to abut upon Guildersfield-road (Mr. A. Conder for Mr. M. Holmes).—Refused.

Wandsworth.†—Buildings on the western side of Streatham High-road, Wandsworth, between Guildersfield-road and Glencairn-road (Mr .A. Conder for Mr. M. Holmes).—Refused.

Width of Way and Space at Rear.

Fulham.†—An addition to a building on the south-east side of Elysium-mews, Fulham-park-road, Fulham (Mr. A. Bingham).—Consent.

Width of Way.

Islington, West.†—A dwelling-house on the east side of Adam's-place, George's-road, Holloway (Mr. W. Goring).—Consent.

Clapham.—That the Council do accede to the request made by Mr. E. C. Ide for Mr. G. Heridge for permission to retain Nos. 27, 29, and 29A, Upper Orchard-street, Lyham-road, Clapham.—Consent.

Hackney, North.†—A one-story addition at the rear of No. 150, Tottenham-road, Dalston, with external walls at less than the prescribed distance from the centre of the roadway of Culford-mews (Mr. G. Chamberlain).—Consent.

Rotherhithe.—A building on the north side of Seth-street, Rotherhithe (Mr. J. P. Choate for Mr. W. C. Latham).—Consent.

Brixton.—A one-story shop upon part of the forecourt of "Herbert House," Coldharbour-lane, Camberwell, with external walls at less than the prescribed distance from the centre of the roadway of Milkwell-yard (Messrs. T. Laws and Son for Messrs. Hammond and Baker).—Consent.

Lines of Frontage and Construction.

Lewisham.—A projecting steel structure in front of premises on the west side of Kilmorie-road, Forest-hill (Mr. J. M. Kennard for "Oxy-chlorides," Ltd.).—Refused.

Space at Rear.

Kensington, South.—A modification of the provisions of Section 41 with regard to open spaces about buildings, so far as relates to the proposed erection of a building, with external staircase and balconies at the rear, on the site of Nos. 11 and 11A, North-row, Earl's-court, Kensington (Mr. W. G. Hunt for Mr. C. G. Hatt).—Consent.

Hoxton.—A studio at No. 207, Old-street, Shoreditch (Messrs. Edwards and Co.).—Refused.

Width of Way, Line of Frontage, and Space at Rear.

Holborn.—A building with a projecting staircase in front and an irregular open space at the rear, on the site of No. 50, Ormond-yard, Holborn (Mr. W. H. Winder for Mr. F. Pettitt).—Consent.

Deviation from Certified Plans.

Strand.—Certain deviations from the plans certified by the District Surveyor, under Section 43 of the Act, so far as relates to the proposed rebuilding of Nos. 61, 62, and 63, Jermyn-street, Piccadilly (Mr. W. Woodward for Messrs. White and Co. and Mr. F. Sweetland.)—Refused.

Whitechapel.—Certain deviations from the plans certified by the District Surveyor under Sections 13 and 43 of the Act, as far as relates to the proposed rebuilding of the "Archers' public-house, No. 24, Osborne-street, Whitechapel, at the corner of Old Montague-street (Mr. J. D. Scott for Mr. A. J. Goddard).—Refused.

Formation of Streets.

Lewisham.—That an order be issued to Mr. J. W. Webb refusing to sanction the formation or laying out of a new street for carriage traffic, to lead from Codrington-hill to Crofton-park-road, and of a street for foot traffic only to lead out of the east side of Bexhill-road, Lewisham.—Refused.

Buildings for the Supply of Electricity.

Bermondsey.—Supports for a cast-iron tank at a generating station and works on the west side of The Neckinger, Spa-road, Bermondsey (Messrs. Kincaid, Waller, Manville, and Dawson for the Council of the Metropolitan Borough of Bermondsey).—Consent.

Cubical Extent.

—*Deptford.*—A modification of the conditions of consent of December 16, 1902, to the erection of two sheds at Messrs. Farquharson Bros. and Co.'s wharf, approached from the north side of Rollins-street, Deptford, so far as relates to the erection on the roof of one of the sheds of a wooden sign-board and lettering (Messrs. Farquarharson Bros. and Co.).—Consent.

Dwelling-houses on Low-lying Land.

Rotherhithe.—That the solicitor do prepare a licence under Section 122 of the Act, to Mr. H. Chamberlain, for the erection of six dwelling-houses on low-lying land situate near No. 360, Rotherhithe-street, Bermondsey.—Consent.

The recommendations marked † are contrary to the views of the local authorities.

ROYAL COMMISSION ON LOCOMOTION.

THE Royal Commission on Locomotion sat again at Westminster Palace Hotel on Thursday last week, under the Chairmanship of Sir David Barbour.

Mr. Andrew Young, the Valuer to the London County Council, was called and said that he had been valuer to the Council since 1889, and prior to that date was Valuer and Surveyor to the London School Board. He had valued and negotiated the purchase of all the property required by the Council in connexion with street improvements carried out by them since they were constituted under the Local Government Act, 1888. Referring to the tables submitted by Mr. Gomme, the Clerk to the Council, and which gave particulars of the various improvements carried out by the Council and the Metropolitan Board of Works, witness said that they showed that in the case of new thoroughfares the surplus land formed a much greater proportion of the gross cost than in the case of widenings. In the case of Northumberland-avenue the receipts from surplus land exceeded the gross cost by approximately 120,000*l.* With regard to the Thames Embankments, although the purchase of the necessary property involved very heavy expenditure, the bulk of the land reclaimed was devoted to public purposes, and the value of the cleared sites was comparatively small. He was of the opinion that the only economical method of carrying out street improvements was by laying out the new streets in such a way that it would not be necessary to acquire a large proportion of valuable property now occupied for business purposes. Where practicable they should be carried through property of an inferior class where the formation of a broad thoroughfare would not only be possible at much less cost for property, but would, by facilitating ventilation, improve the condition of the district from a sanitary point of view. One important point in connexion with street improvements was the extent to which it might be profitable to extend the area of property taken for recoupment, and as the proposal under consideration was the construction of streets of a greater width than any hitherto projected in London, viz., 160 ft., he thought there would be more than usual difficulty in deciding that point. The construction of a road of such size would of necessity involve an outlay of great magnitude. The effect of the construction of such streets would raise enormously the value of property in the remoter districts, on account of their being brought more readily into touch with the central districts of London. If special means for locomotion were provided, by means of surface tramways and tube railways beneath the streets, the possibilities of recoupment would not only be increased but would extend over very large areas of those remoter districts. He had prepared estimates of the cost of acquiring the necessary property for one of the proposed roads, in all probability the cheapest of them to construct. The thoroughfare he had taken would form a continuation of the new street from Holborn to the Strand. It would cross the Thames, and then proceed through Southwark, Bermondsey, and Camberwell to the Crystal Palace. In preparing his estimate he had included an area of land 150 ft. deep on either side of the proposed thoroughfare. That would enable the Council to purchase the property under existing conditions and to resell with the benefit of the improvement that would be conferred upon the property after the construction of the new road. These limits were purely arbitrary, and it was obvious that a very much larger area of property would be benefited by the construction of the street through which the road would pass. The probable gross cost of acquiring the property amounted to 12,000,000*l.*, but a considerable proportion of that sum could no doubt be recovered by the sale of the surplus property, after the improvements had been executed. He considered that in laying down such new streets they should as far as possible take the form of new thoroughfares and not merely the widening of existing roads. Experience had shown that new streets were more economical in the sense that they returned a larger amount by way of recoupment after construction than did mere road widenings. It was evident that the acquisition of so large a quantity of property as would be required for the scheme he had mentioned, and also for schemes of a like nature, would displace a considerable number of persons of the working classes. New accommodation for these persons would have to be provided, and probably to some extent before the old houses were demolished. That would considerably enhance the difficulty of carrying out such schemes. The magnitude of rehousing might be judged from the fact that, according to a computation he had made with regard to the proposed Strand to Crystal Palace street, more than 41,000 persons would be displaced, and to provide sufficient new accommodation would necessitate the acquisition of a site or sites of over 200 acres. Such an area could only be acquired, without making further displacements, on the outskirts of the county near the southern end of the proposed road. It had been found, he continued, in speaking of the erection of such houses in the centre of the county, that it was not commercially possible to erect artisans' dwellings on valuable commercial land. Again referring to the route to the Crystal Palace, witness said that approximately it would be 6½ miles in length, and on the basis of a gross cost of 12,000,000*l.* sterling the cost per mile would be over 1,750,000*l.* With one exception the older improvements were for widenings very much less than that which he had suggested, the exception being the Holborn to Strand improvement, where the roadways were being made 100 ft. wide. The length of the improvement was approximately half-a-mile, and the estimated cost of acquiring the necessary property 4,500,000*l.*, or at the rate of 9,000,000*l.* per mile. The extent of the property scheduled for the purpose of recoupment was exceptionally large, and it was estimated that in view of its position as much as 4,000,000*l.*, or nearly 89 per cent. of the estimated gross cost, would be received from the sale of surplus land. The net cost of property, therefore, worked out at about 1,000,000*l.* sterling per mile. It was not to be anticipated that similar satisfactory results would accrue from an improvement which was not so centrally situated. In the latter case, where the land value might be appreciated in as great a proportion, the buildings formed a large proportion of the total value of the property bought, and there would be on the destruction of those buildings a comparatively greater loss. The London County Council had for several years past been engaged in preparing a plan showing the ownership of property within the county, and, from the information relating to about 5-6ths of the county, it would appear that while 27,450 acres, or about 35 per cent. of the total area of London, were vested in the comparatively small number of less than 100 persons, a further area of 33,350 acres was vested in nearly 10,000 owners. The matter was further complicated by the fact that London had been developed on the lines of building leases for terms of less than 100 years. That rendered more difficult the formation of a satisfactory scheme for the persons who would benefit by the construction of the roads to contribute towards the cost. He had prepared estimates of the probable cost of interfering with cellars and vaults beneath the roadways from Hammersmith to the City and from the City to Stamford Hill along the route of a suggested shallow tramway-subway. From the information he had received he estimated that the interference with those cellars and vaults would involve the payment of compensation to the extent of over 1,250,000*l.* The estimate was based, however, on the assumption that the Council would obtain special statutory powers exempting them from the operations of the general law, whereby they would be able to interfere with such cellars and vaults without being compelled to take the whole of the property of which they formed a part. It had been assumed also that the Council would not have to pay for the subsoil of the streets. The total length of the route was 5¼ miles, so that the cost would be roughly 250,000*l.* per mile. Witness then dealt at considerable length with certain points arising out of the examination of Mr. Gomme, more particularly with reference to matters in connexion with the Holborn to Strand improvement.

Sir Alexander Bruce, the Assistant-Commissioner of the Police, was then called. At considerable length he went into the matter of the regulation of surface traffic. Omnibuses and hackney carriages, he said, formed 60 per cent. of the total traffic within the county.

METROPOLITAN ASYLUMS BOARD.

THE usual fortnightly meeting of the Metropolitan Asylums Board was held on Saturday last week, at the offices, Victoria Embankment; Sir R. Hensley in the chair.

Among the correspondence received was a letter from the Local Government Board stating that that Board had approved of the amended plans of the additional accommodation to be provided for nurses at the South-Eastern Ambulance Station. The Local Government Board asked also to be furnished with a detailed estimate of the cost of the proposed re-construction of the South-Eastern Hospital, and to be informed of the result of the managers consideration of the matters referred to at the recent interview between the Chairman of the Hospital's Committee and the Managers' architect and the Board inspector, Mr. Downes, and their architect. The letters were referred to committee for consideration and report.

On the recommendation of the Children's Committee the Works Committee were authorised to carry out the work of re-laying the surface water drain at the Downs School. The cost is estimated by the Engineer to be 150*l.*

BIRMINGHAM MASTER BUILDERS' ASSOCIATION.

THE ordinary annual general meeting of the members of this Association was held on the 12th inst., at the Grand Hotel, Colmore Row, Mr. Albert S. Smith presiding. The annual report expressed regret that the depressed condition of trade referred to twelve months ago has continued during the past year. After again meeting the Operative Plumbers in conciliation, the committee had been unable to come to any satisfactory arrangement as to the code of working

rules, the operatives declining to sign for less than three years. There were, therefore, no rules in existence with this branch. In view of the unreasonable demand of the National Association of Operative Plasterers in various parts of the country, that members should be paid on works in districts where a lower rate of wages prevailed than the current rate of the districts where the contractor's chief office was situated, the committee had given notice to the Operative Plasterers to abolish all existing rules after April 1 next. With this exception, the committee had, after careful consideration, decided not to disturb the trade by serving notices for alteration of rules, although, in their opinion, the present state of the trade fully justified notices to reduce the existing high rate of wages. The dispute with plasterers at Marle Hall, Llandudno, on this question had been before the committee on several occasions, and also before the National Federation, and was not yet fully disposed of. On several occasions deputations had interviewed sub-committees of the Architectural Association on matters of importance in the interests of the trade, notably the interpretation of the Prime Cost Clause in the conditions of contract, and "items of making good after other trades." The balance-sheet showed total ordinary receipts for the year 219*l.*, which, with the balance from last year, made a total of 391*l.* The various disbursements amounted to 204*l.*, and there remained 187*l.* to the credit of the Association.

In moving the adoption of the report and balance-sheet the President said he wished that the opening paragraph of the report had been different in tone. Trade last year was bad. Since then it had visibly declined. The decline was small in volume, which also meant that the builder's profits had been proportionately fine. They could not say that prices were low. Materials had not come down to any great extent. Labour was at the highest point it had ever reached; and so they could not quite say that building prices were low. Nevertheless, the committee, after carefully considering the question, had refrained from giving notice to the operatives for a reduction of wages, hoping that trade would soon show a turn for the better. The relationship between masters and men had been good throughout the year, with the exception of one branch. He referred to the plasterers. With them, as with other branches, a code of working rules was drawn up and signed by masters and men. These rules applied over a radius of five miles; but the National Association of Operative Plasterers had sought during the year to extend the radius to 120 miles, under cover of a by-law of their own union. He thought this needed no comment from him to show its flagrant unfairness and onesidedness. If they sent a plasterer into a district where the rate of wages was lower than theirs, they must pay him their rate of wages; if they sent him into a district where wages were higher they must pay him the higher rate of wages. It was thought by the committee that if the signed rules of the plasterers were to be contravened in such a way—by by-laws made to circumvent them—it would be better to be without them at all. It was hoped and confidently expected that other towns would follow their example in giving notice to the operative plasterers to abolish the existing rules after April 1 next. Until rules could be made which would be loyally abided by and fairly kept by both sides it would be better for them to have none.—Mr. William Sapcote seconded the motion, and endorsed what the President had said in reference to the plasterers.—The motion was carried unanimously. Lieutenant-Colonel Barnsley was unanimously elected President for the ensuing year, and Mr. J. B. Whitehouse vice-president; Mr. G. Twigg was reappointed treasurer; Messrs. Thomas Johnson and J. S. Surman auditors; a committee was elected, and Mr. E. J. Bigwood was re-elected secretary. On the motion of Mr. J. B. Whitehouse, seconded by Mr. C. Copeland, a vote of thanks was passed to Mr. Albert S. Smith for his services during the past year in the position of President. Mr. Smith having responded to the compliment, a vote of thanks to the chairman concluded the meeting.

A dinner followed in the Grosvenor Room, and was largely attended. The chair was occupied by Lieutenant-Colonel John Barnsley. After the loyal toasts had been honoured, the toast, "The City and Trade of Birmingham," was submitted by Councillor Whittall, who gave an account, from a builder's point of view, of the work carried on in some of the departments of the Corporation, mentioning in particular the Public Works Department and the Drainage Board. He also attached much importance to the education side of the work of the Corporation, and in this connexion referred to the results obtained at the technical schools. If manufacturers were to compete satisfactorily in the commercial and manufacturing world it was imperative that the greatest attention should be paid to the scientific and technical training of students. He mentioned that in the building trade there were no fewer than 580 students, while a great many applicants had had to be rejected owing to the pressure on the school accommodation.—Mr. Ebenezer Parkes, M.P., whose name had been coupled with the toast, responded. Mr. Thomas Barnsley proposed the toast, "Success to the Birmingham Builders' Association," giving an account of the work carried on by the organisation during the past year. The toast was acknowledged by the President. The toast "The Architects and Surveyors" was proposed by Mr. J. B. Whitehouse, and Mr. Arthur Harrison and Mr. Anthony Rowse responded on behalf of the architects and surveyors respectively.—Mr. A. S. Smith, the new President, proposed the toast, "National Federation of Building Trade Employers of Great Britain and Ireland," and referred to the work which had been performed under its auspices, especially during the past few years. The response came from Alderman John Bowen, the ex-president of the National Federation, and Mr. C. H. Barnsley (President of the Midland Federation).

Correspondence.

THE OLD SORBONNE CHAPEL, PARIS.

SIR,—Accompanying the plan hereof in your issue of August 8, I wrote: "... owing to the Rue de la Sorbonne 'new buildings' cutting across the western extremity of the nave, it is impossible to state for certain the length of the chapel, and whether it had any towers at the west end, as shown in the 'Tapestry Map' of Paris."

In the photograph of the plan from which my diagram was taken there *is* no trace of foundations further west; but the Librarian of the Paris University, at the Sorbonne, while assuring me no foundations of the west front were discovered while excavating for those of the "new buildings," has courteously sent me a small tracing of the foundations of the old chapel, *plus* the plan of that part of the new buildings abutting on the site of the foundations referred to, and, just west of the "new buildings," in the Rue de la Sorbonne itself, are marked two fragments of wall foundations, at 16 mètres from the interior line of the quadrangle at the point of juncture with the northern side of the old chapel plan. These two fragments are practically opposite the extremities of the north and south walls of the old chapel site, and though my correspondent has marked them with notes of interrogation, it is obvious that the fragments stand for the foundations, or part of them rather, of the west towers. This implies the construction, at a later date than the chapel itself, of a façade of some importance, as the plan of the chapel shows no aisles or transepts. The "evidence" for the Tapestry Map view is supported, or rather corroborated, by an illustration in the "Collection Destailleurs," of the eighteenth century.

JOHN A. RANDOLPH.

The Student's Column.

CONCRETE-STEEL.—XXI.

FOUNDATIONS.

CONCRETE-STEEL is of especial value in foundation work of all kinds. By its use the amount of excavation required for ordinary foundations is considerably reduced, and there is a corresponding reduction in the mass and weight of the foundations necessary for the support of buildings. Apart from the saving so effected, the further advantage follows that there is little interference with the hard crust frequently overlying soft and unstable strata.

Foundation slabs are often desirable for ground of low or variable bearing power. In one case there would be a general settlement with ordinary foundations subjected to uniform loading, and in the other case there would be local settlement in specially weak points which are not unfrequently found in unsuspected places. By forming a foundation slab or "raft" the entire building may be "floated," so that adequate support will be afforded over the entire site.

Assuming the ground to possess uniform bearing power, the tendency must be for columns or walls to depress the portions of the slab immediately below them, and to force up the intermediate portions, as shown diagramatically in Fig. 36. In a case of this kind the effect is the converse of that produced in a continuous beam carrying a uniformly distributed load. Beneath, and for a short distance on each side of, each column or wall, the lower fibres and the upper fibres in the middle portion of each span are in tension. To meet these conditions, the steel reinforcement of the slab should be disposed after the manner indicated in Fig. 37.

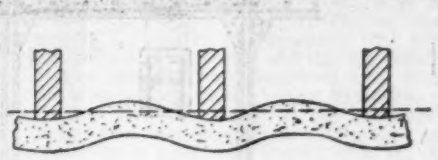

Fig. 36.

Fig. 37.

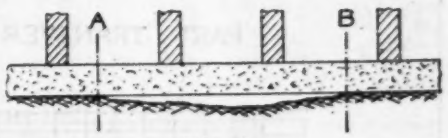

Fig. 38.

But there is no guarantee that the ground will act in the uniform manner here suggested. It may tend to sink at in some entirely unexpected part, as shown in Fig. 38. The effect will then be to disorganise any arrangement of the reinforcement such as that proposed in Fig. 37, for the whole of the lower fibres between the points A and B will be in tension, and in sections of the foundation slab on each side of AB the whole of the upper fibres will be in tension.

Consequently we arrive at the conclusion that in all cases where the uniformity of the ground cannot be absolutely relied upon it is a necessary precaution to employ reinforcement continuously in the upper fibres, and similarly to apply continuous reinforcement in the lower fibres of foundation slabs.

This is a point of vital importance which is sometimes overlooked in concrete-steel construction. It may frequently be quite safe to apply all the reinforcement near the lower surface of the slab, but as the absolute stability of the foundation is a most essential factor in all building construction, we think it would be wise to apply reinforcement near both surfaces as a matter of precaution against unforeseen contingencies.

Economy is always desirable, but an extra ton or two of steel is much less costly than a new building, and a little extra expense in the foundations may generally be regarded as an insurance premium of account of contingencies.

It will, of course, be understood that the reinforcement must be disposed in longitudinal and transverse lines in all foundation slabs, thereby forming a network capable of withstanding stresses in any direction.

As an example of a continuous floor slab, we may quote one constructed on the Hennebique system in a large granary and flour mill at Swansea.

The granary measures 127 ft. long by 48 ft. 6 in. wide, the total height from the foundations to the roof being about 112 ft., or 130 ft. to the roof of the cleaning tower. This building is designed for the storage of more than 7,000 tons of grain.

The adjoining flour mill measures 80 ft. long by 40 ft. wide, and is 112 ft. high from foundation to roof, the latter being constructed so as to form a storage reservoir capable of holding about 100 tons of water.

The foundations of both buildings are upon soil consisting of sand and rubbish brought as ships' ballast and deposited on the soft mud of the estuary at Swansea.

In order to ensure perfect stability, a continuous foundation slab was formed for the two buildings, and, as the buildings are entirely of concrete-steel, they constitute a monolithic structure in which all the members afford mutual support to each other, and local settlement is practically impossible.

A somewhat similar example is to be found in the Co-operative Wholesale Society's warehouse, at Newcastle-on-Tyne.

This building measures about 125 ft. long by 90 ft. wide, the height from foundation to roof being 95 ft.

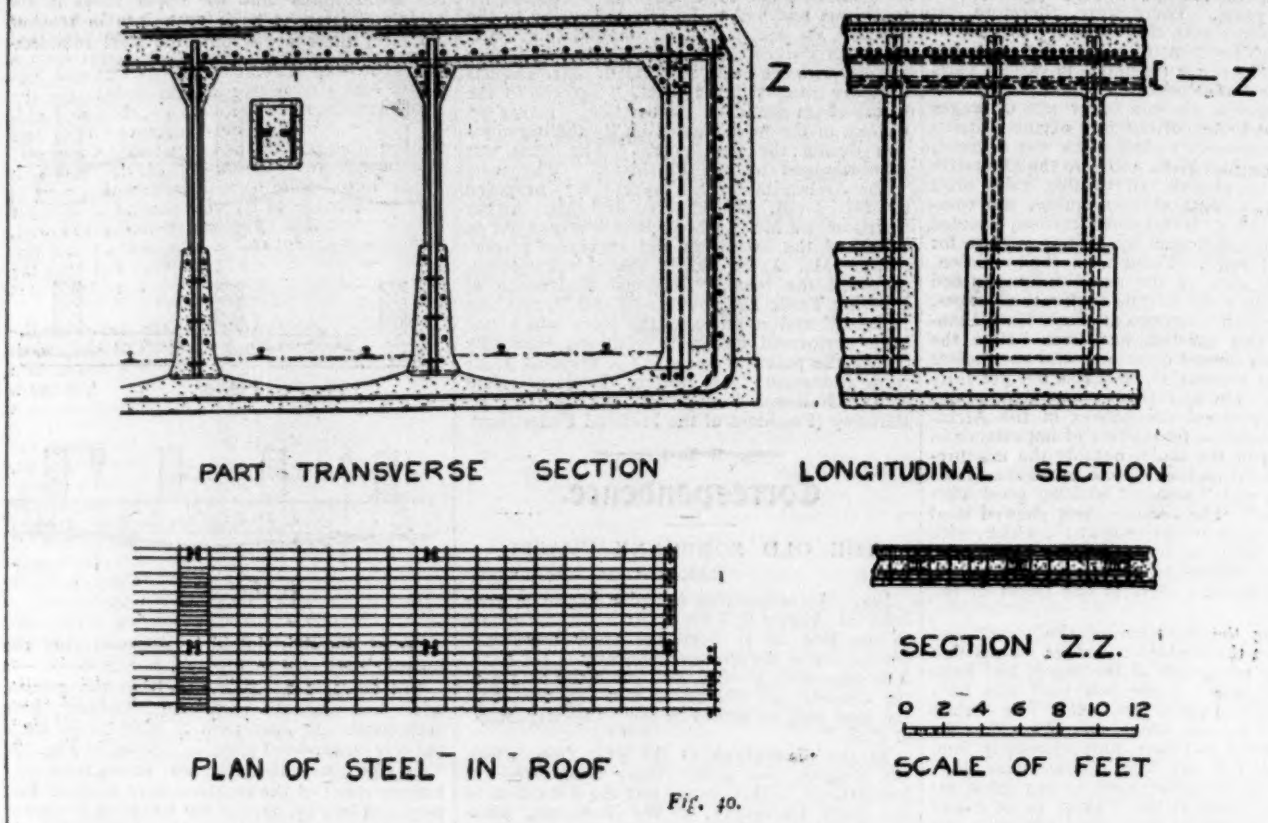

Fig. 40.

The ground is said to be composed of slush, peat, quicksand, etc., to a depth of more than 60 ft., and here again a continuous foundation slab of concrete-steel was laid down, calculated to resist a reaction of the ground to the extent of about 2½ tons per square foot, and to distribute the weight of the building uniformly over the whole area of the site.

This building, also, is constructed entirely of concrete-steel, and with its foundation slab practically represents a huge box girder in which no local displacement is at all likely to occur.

Expanded metal is a very suitable form of reinforcement for foundation work of the kind mentioned above. It affords an excellent bond, and owing to its continuity in every direction gives to every part of a foundation adequate resistance to local settlement.

Foundations constructed on the Cottançin system have been used in France and elsewhere with considerable success. The distinctive characteristic of this type of concrete-steel is a woven core of metal rods forming a continuous network in which longitudinal and transverse wires are interwoven after the manner of basket-work. Foundations on the caisson principle constitute a feature of this system. The foundation slab is of concrete or brick reinforced in the usual way by a network of steel rods, and is further stiffened by walls built on the underside, so as to form a series of cellular compartments. Foundations so designed have been found very useful in the case of treacherous soils.

As an example showing the suitability of the Cottançin system under such conditions, we may mention the experiments conducted by engineers of the Ponts et Chaussées, at Tunis, for the purpose of ascertaining the most suitable type of foundation for the extension of the city over the silt-covered area of an ancient salt lake. Ordinary foundations were found to be incapable of supporting a load exceeding 32 lb. per square foot without unequal settlement, while those of the Cottançin type carried a load of 777 lb. per square foot, with a uniform subsidence of only 0.08 in., and when the load was increased to 1,711 lb. per square foot the settlement was still uniform and was less than 1.19 in.

An example in a more accessible locality is to be found in the boiler-house foundation recently constructed in St. James's Park, Westminster, for H.M. Office of Works. The soil in this district is of alluvial character, and in early times the whole area was more or less covered with water. Those of our readers who have had occasion to erect buildings in Westminster, or who have observed the operations conducted by others, are probably aware that deep and expensive foundations are generally thought necessary to insure stability. The Cottançin foundation to which we refer was designed for the purpose of supporting some heavy steam boilers for the pumping-station in St. James's Park, and as a depth of 12 in. was found to be amply sufficient, the advantage presented by this form of concrete-steel foundation is quite evident.

In this instance the walls of the caissons, or cellular compartments, were built of steel-cored brick with a cover, or foundation slab, of reinforced concrete, the whole being tied together to as to constitute a single self-contained structure.

One argument advanced in favour of the Cottançin system is the non-communication of vibrations from heavy machinery through the soil. Satisfactory confirmation of this contention was furnished by the foundation built for the 1,000 horse-power Cockerill gas-engine at the Paris Exposition of 1900. This machine was said to cause a shock equal to 250 tons every tenth of a second. The foundation, constructed on the artificial soil of the Champ de Mars, consisted of brick-steel caissons with a concrete-steel covering slab, and the holding-down bolts of the engine were taken through cement-steel tubes to the bottom of the brick walls.

Footings for columns are frequently constructed as shown in Fig. 39, which includes

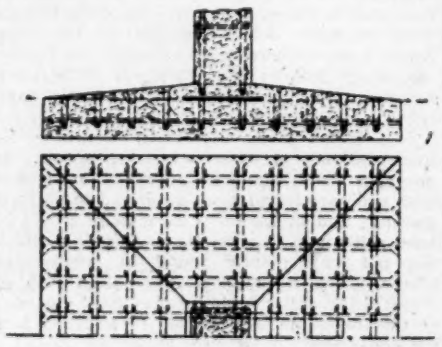

Fig. 39.

a section and half plan of a footing on the Hennebique system, but, with the exception of the stirrups for resisting shear, the design is very similar to that generally adopted by various engineers.

A footing of this character may be regarded as consisting of an infinite number of cantilevers connected together and radiating from a central abutment, and subject to bending stress from uniformly-distributed loads acting in an upward direction, while the central abutment carries an almost concentrated load acting in a downward direction.

Hence, the upper portion is in compression and the lower portion is in tension, and the main reinforcement must be near the lower surface of the foundation. The horizontal plate in Fig. 39 is intended to distribute the vertical pressure of the column, of which a small part is shown in the section.

Footings of very considerable size have been made on this principle, the largest hitherto constructed having a side of about 70 ft.

Concrete-steel foundations, substantially as here described, were employed in all the columns in a large sixteen-story office-building recently erected at Cincinnati, U.S.A. This building, which is designed in accordance with the Ransome system of concrete-steel, is rectangular in plan, and occupies a site measuring approximately 100 ft. by 50 ft. It is built on a stratum of gravel and sand, and the supporting columns are spaced so as to require main girders of 17 ft. and 33 ft. span centre to centre, and secondary girders of about 16 ft. and 18 ft. span.

The footings vary in size according to their position and loading. Along the two street frontages seven footings are built separately, one for each column; at the back, which adjoins a four-story building, there are six foundations each carrying two columns; and along one side, next to a six-story building, one continuous foundation carries four columns.

The dimensions of the single-column foundations are as follows:—

Area of base.....	12 ft. 9 in. square.
Area of top	4 ft. 9¼ in. square.
Height (base to top).....	3 ft. 1 in.
Reinforcement longitudinal	27 bars, ¾ in. square, 11 ft. 3 in. long.
,, transverse	26 bars, ¾ in. square, 11 ft. 3 in. long.

The two-column foundations have sloping sides and one sloping end, the other end being connected with the back wall of the building. Above the sloping sides a rectangular longitudinal rib is formed, running the whole length of the foundation, at each end of which one column is fixed, and at the junction with the column away from the party wall additional concrete is placed to fill up the angle formed by the sloping sides and the upper rib of the footing.

The main dimensions of the two-column foundations are as follows:—

Length of base	20 ft. 10 in.
Width of base	10 ft. 0 in.
Height (base to end of batter)	3 ft. 1 in.
Height (base to top of rib)	6 ft. 0 in.
Length of longitudinal rib	19 ft. 10⅞ in.
Width of longitudinal rib	4 ft. 5 in.
Height of longitudinal rib	2 ft. 11 in.
Reinforcement in lower portion, transverse.	49 bars, 1 in. square, 12 ft. 0 in. long.
Reinforcement in upper portion, longitudinal.	2 bars, ¾ in. square, near top surface in middle.
" "	10 bars, 1¼ in. square, spaced equally across section just below ¾ in. bars.
" "	9 bars, 1¼ in. square, spaced equally across section just below the other 1¼ in. bars, and having the ends bent down to form a truss.
Stirrups in upper portion, vertical.	9 ½ in. inverted U-bars, in cross section. (8 such sets of stirrups in longitudinal section)

The four-column foundation extends below and beyond the external face of the party-wall at one end of the building, and the base of the footing projects about 4 ft. beyond the front end of the wall. The width of the foundation varies from 7 ft. 9 in. to 8 ft. 10 in., the other dimensions and the reinforcement being generally similar to those of the two-column foundations.

The footings are all built independently of the columns, for which cast-iron base plates are provided. In one sense this seems to be an undesirable feature, as it breaks the continuity of the concrete-steel construction. As, however, the loads are large—ranging from 500 tons to 750 tons per column—the adoption of cast-iron column bases is a wise precaution for insuring the adequate distribution of the load transmitted.

Fig. 40 represents an interesting example of concrete-steel construction designed for the subway of the Philadelphia Rapid Transit Company. The section shows rather more than one-half of a four-track subway, and the drawings serve to illustrate floor as well as foundation design, for the roof of the subway is essentially the same as a floor under a uniformly distributed load. It should be remarked that the outer black line in the foundation, wall and roof is intended to represent a waterproof layer of asphaltic mastic ½ in. thick. In other respects the drawings are self-explanatory.

NEW BOARD SCHOOLS, LONDON: SESSION 1904.

The School Board for London have just issued their annual list of the sites in respect of which they will apply to the Board of Education for a Provisional Order to enable them to meet the increasing demands for elementary school accommodation. The total number of sites scheduled is 47, ranging in area from 960 sq. ft. to, say, 105,850 sq. ft., but inasmuch as five are alternative sites, the actual number to be taken is 42. Taking a mean between the areas of each pair of alternative sites, we calculate that the 42 sites cover in the aggregate 839,578 sq. ft. (or thereabouts), that is to say, between 19 and 20 acres. The 47 scheduled sites lie in the boroughs of Hammersmith, two: land in Faroe-road; and about 105,850 sq. ft. in Adelaide-road, with part of Thorpe-banks. Deptford, two: Lucas-street; and some land on the eastern side of the Shortlands and Nunhead Railway, alternative to the Avignon-road site scheduled last year. Greenwich, about 77,760 sq. ft. in Sherington-road, part of the East Combe Estate. Lewisham: 75, Ardgowan-road. Woolwich, three: Foxhill School; Maryon Park; and Greenvale-road. Hackney, four: two alternative sites in Culford and Hertford-roads; and two in Benthal and Glyn-roads. Shoreditch: Gloucester-row and Upper John-street. Camberwell, two: 220, Peckham-rye; and Gloucester-road. Southwark, two: Beresford-street; and Doddington-grove, alternative to Upper Kennington-lane site. Battersea, three: Ingrave, Berkley, and Wayford-streets, Culvert and Creek-roads, and Berkley-square; 50 houses in all, with the site and soil of Berkley-square. Lambeth, four: Brixton-hill; "Glenelg" in Court-road; Priory-road; and Upper Kennington-lane. Wandsworth, four: West-hill; Rastall-avenue; Hearnville-road; and nine houses and gardens in Montserrat-road, in lieu of the Stratford-grove site scheduled last year. St. Pancras, three: Holmes and Fortess-roads, and Harrison-street. Hampstead, land, houses, gardens, etc., Nos. 24, 32, and 34, Haverstock-hill. Paddington: Fermoy-road. Bermondsey, two alternative sites, embracing many houses in Kenning, Adam, Clack, Albion, and Temeraire-streets. Poplar, two: Fern-street; and Eagling and Bruce-roads. Stepney, eight: in Trafalgar-square, Walker, Pigott, Varden, Berner, and Blakesley-streets; two alternative sites in St. Peters-road and Norfolk-street; and the Wycliffe Chapel and its adjacent burial-ground, Philpot-street. Penge U. D.: No. 32, Versailles-road, being the Homes for the Deaf, at Anerley.

ART IN SCOTLAND.

In a report which they have just issued the Departmental Committee appointed to inquire into the administration of the Board of Manufactures, with special reference to the administration of the grants made by Parliament for purposes of Art in Edinburgh, recommend that (*a*) the Board should be reconstituted as the Board of Trustees, and consist of fewer (15) members, to include three members of the Royal Scottish Academy, and holding office for a period of five years; (*b*) a new School of Art for Edinburgh should be established on the lines of the Glasgow School of Art, the present school under the Board being then discontinued, and the applied Art School being incorporated with the new school, but subject to the control of Sir Rowand Anderson as long as is possible; (*c*) the constitution of the National Gallery should be assimilated to those of the National Galleries of London and Dublin, the director being given liberal powers in the purchase of pictures; (*d*) a new building should be erected or acquired for the National Gallery, the trustees to contribute 20,000*l.* out of their accumulated funds; (*e*) when the new National Gallery is provided the whole building now occupied by the National Gallery and Royal Scottish Academy should be handed over to the Royal Scottish Academy to be used by that body exclusively for Art purposes, including exhibitions and Art-education; (*f*) in return for a Treasury grant towards maintenance and up-keep of the building the Academy should convey to the nation all the works of art at present lent to and exhibited in the National and National Portrait Galleries; (*g*) the existing grant of 200*l.* per annum for five years for the purchase of antiquities by the Society of Antiquaries should be made permanent; and (*h*) the Board should exercise a general supervision and ultimate control over the National and National Portrait Galleries, and continue to hold in trust Dunblane Cathedral. The report contains various other recommendations in respect of increased grants in aid, salaries, allowances, etc., and suggests that increased charges, amounting to a total of 4,200*l.*, should be put upon the annual votes. Mr. Akers-Douglas, Home Secretary; Sir John Stirling Maxwell, M.P.; Sir Walter Armstrong, Director of the National Gallery of Ireland; Sir Kenneth J. MacKenzie, King's and Lord Treasurer's Remembrancer; and Mr. T. Ryburn Buchanan, M.P., formed the committee of inquiry.

OBITUARY.

Herr Kamillo Sitte.—A Reuter telegram from Vienna states that Herr Kamillo Sitte, a prominent architect and writer on art topics in Vienna, died recently in his sixtieth year. He was the author of the work entitled "The Construction of Cities upon Artistic Lines," which has recently been translated into French and English.—*Times.*

GENERAL BUILDING NEWS.

Wesleyan Chapel, Hafod, Wales.—The foundation stones of the new Wesleyan Chapel, Hafod, Wales, were laid recently. The new building is to accommodate 300 people, and will cost about 1,300*l.* The builder is Mr. Julian, Pontypridd, and the architect Mr. A. O. Evans.

Workhouse, Hexham.—On the 10th inst., at the meeting of the Hexham Board of Guardians, a report was read from Messrs. Oliver, Leeson, and Wood, architects, Newcastle, on the subject of improvements to the Union Workhouse. The architects suggested that the most satisfactory course would be to adopt a scheme for rebuilding the old portions by instalments as found convenient, and in such a manner that the various portions when built would form a comprehensive scheme. The Workhouse Improvements Committee recommended that the plans submitted be approved, and that the building of the infirmary be commenced first, and that the other portions be carried out by sections; and further that the width of the proposed new dormitories be reconsidered, with a view to their being made 21 ft. wide instead of 18 ft., if thought desirable. Some remarks followed, when it was agreed that a copy of the architects' report be sent to each guardian, and that the matter come up for consideration at their next meeting.

Chapel, Borrowash, Derbyshire.—On the 7th inst. the Primitive Methodists of Borrowash opened their new chapel. The new chapel is a brick building, with stone dressings. A stained-glass window adorns the front elevation, just over the projecting lobby. An orchestra at the rear is provided for the choir and the organ, near which there is also a vestry. The total cost, including land, heating by hot water, and furnishing will be about 1,025*l.* The architect is Mr. F. S. Antliff, of Draycott, and the builder Mr. G. Wagg, of Derby.

Police-court, Grimsby.—The new County Police Court in Brighowgate, Grimsby, has just been opened. The buildings comprise a new Courthouse, with Justices' retiring-room, witnesses' room, etc. The Superintendent's house is on the east side of the road leading to the administrative block and stables. The Court-house and the administrative block, which consists of two residences for constables, a charge room, cells, and exercise yard, are on the west side of the road. The stable and coach-house are at the extreme end of the site. Messrs. Hewins and Goodhand, Grimsby, secured the contract, the amount of their tender being 9,121*l.* 12*s.* The concrete facings have been supplied by Messrs. Daniels and Co., of Lincoln, and have been made with a mixture of red Mansfield stone and Portland cement. The wood block flooring of the Court-house has been executed by the Westminster Patent Flooring Company. The terrazo floors in the main entrance, Justices' entrance, and lavatory, have been laid by the Aerolithic Company. Messrs. Boyle and Son, Holborn, have provided the ventilation, and Mr. D. J. Dobby, of Grimsby, the heating apparatus of the Court-house and cells, also the lighting by gas of the Court-house. Messrs. Sharpe and Co., of Grimsby, have carried out the plumbing work of all the buildings and the gas for the Superintendent's house, administrative block, and stables. The entrance gates have been supplied by Messrs. Jones and Willis, of Birmingham. The lead lights and casements have been supplied and fixed by Messrs. A. Seward and Co., of Lancaster. Mr. Thropp, the County Surveyor, has been architect for the work, and during the chief part of the period of construction has had the assistance of his partner, Mr. R. R. C. Harding, architect. Mr. Mark Hatcliffe has acted as clerk of works.

Dispensary, Leeds.—The new Dispensary in North-street, Leeds, is nearing completion. The architects are Messrs. Bedford and Kitson. The site of the new building, which covers over a quarter of an acre, has been purchased at a cost of 10,000*l.*, and the building will cost about 18,000*l.* Accrington brick has been used in the buildings, with dressings of Portland stone. The residential part faces North-street, and occupies the first and second floors, with kitchens and servants' rooms above, while the ground floor of the North-street front is occupied by the board-room, secretary's office, etc. Behind this, and entered by a door at the south-western corner in Hartley Hill, is an out-patients' waiting-hall, covering an area of 90 ft. by 30 ft. On either side of this are the surgical, medical, and ophthalmic consulting and examination rooms. From the waiting hall dual corridors lead to the dispensary lobby, where, immediately they have been attended to, patients will leave by a special exit door opening on to Hartley Hill. Provision has been made on the floor above for the chemical laboratory and for a suggested dental department, while on the same level as the street there are two casualty rooms, with a waiting-room attached.

Wesleyan Chapel, Rotherham.—The new Wesleyan Chapel, Talbot-lane, Rotherham, was opened on the 12th inst. The church itself consists of nave, transepts, and chancel, and will accommodate 860 worshippers, 500 being on the ground floor and 360 in the gallery, which extends round three sides of the building. There are vestries for the minister and the choir, on the ground floor, and a chamber at the side of the chancel and choir is provided for the organ. Advantage has been taken of the sloping nature of the ground, and a church parlour, 36 ft. by 22 ft., has been arranged below the chancel, and on this level also are the kitchen, two class-rooms, and a storeroom. From the gallery level access to the existing school premises is gained,

and there are separate entrances and staircases to the gallery, both from the front and the rear of the church. The woodwork of the pews and the open waggon-headed roof is of pitch pine. The choir stalls are of wainscot oak with carved and traceried seat ends. The pulpit is also of oak, carved and enriched. The tracery windows throughout are filled with tinted leaded lights, the work being carried out by Mr. T. W. Camm, of Smethwick, Birmingham, and the three chancel windows are filled with stained glass, and carried out by Mr. S. Evans, of Birmingham. The heating is by low-pressure hot water apparatus supplied by Wright Bros., Sheffield. The ventilation is by means of hopper inlets on Tobins' principle—the windows also opening inwards at the top—and outlet ventilators placed on the roof. The whole building is faced with stone. The contract has been carried out by Mr. Robert Snell, of Masbro', from the designs and under the supervision of Messrs. W. J. Morley and Son, architects, Bradford, the whole cost being 10,000*l.*, exclusive of organ.

PROPOSED ADDITIONS TO CARDIFF WORKHOUSE.—A meeting of the Cardiff Workhouse Building Committee was held at Ely recently, when the plans submitted by the architect (Mr. Seward) for additional accommodation for nurses at the Cardiff Workhouse were considered and adopted previous to sending them to the Local Government Board.

INFIRMARY, AXBRIDGE.—A new infirmary has just been erected at Axbridge, on the north-east side of the workhouse. The infirmary is a building of two stories, constructed of lime-stone, with Bath-stone dressings, and tiled with Bridgwater inter-locking tile. The building is in two distinct parts, the east side for the men and the west side for the women, and consists of bed accommodation for seventy-two people. On the ground floor are two main wards, having twelve beds each, and being 36 ft. long and 24 ft. wide, with lavatory accommodation adjoining; and there are also four separation wards for noisy or offensive cases, with separate lavatory accommodation; and also two smaller separation wards; and the nurses' kitchen, which has a small lift from the first to the second floor. There is also a lift for patients who are unable to walk, and it is also large enough to take a bed-chair if necessary. Day-room accommodation is provided in two rooms facing the south, with bay windows, and also two bathrooms. The first floor is exactly similar to the ground floor, with the exception that on the women's side the two separation wards will be utilised as lying-in wards, and in both cases the day-rooms will be specially reserved for consumptive cases, and there are also two separation wards for this purpose, and instead of a kitchen, there is a sitting-room for the nurses on duty. Hot water pipes and coils are laid on throughout the whole of the building. Verandahs have been constructed seven feet wide, on the south side of the building. The whole of the building is lit by electric light. The total cost of land, construction of building, heating, lighting, and other contingent expenses comes to a little under 100*l.* per bed. Mr. C. Addicott, of Weston-super-Mare, was the builder, and the architect was Mr. A. Powell.

BOARD SCHOOL, WEST HAMPSTEAD.—The Hon. E. Lyulph Stanley opened a new Board School at Kingsgate-road, West End-lane, Hampstead, on the 16th inst. The building was commenced in September last year and completed in October at a cost of 18,000*l.*, and was handed over to the School Board by Messrs. Lawrence, the builders, one month before the contract time. The school is a senior mixed school, and there is also a separate school accommodating sixty mentally defective pupils. The main school will accommodate 450 children. Mr. T. J. Bailey is the Board's architect.

Y.M.C.A. BUILDINGS, MOUNTPOTTINGER, BELFAST.—The Committee of the Mountpottinger Y.M.C.A. have secured a site for their new premises on the Albertbridge-road. The block has a frontage of 137 ft. and is bounded on two of the sides by Templemore-avenue and Frank-street. The plans of the new building consist of three blocks—A, B, and C. In block A, which comprises three floors of 126 ft. long by about 35 ft. wide, the accommodation is as follows:—Six shops and all requisites for offices or shops. In the centre of the block is the main entrance of the Y.M.C.A., 10 ft. wide, leading to a central vestibule or hall, from which the main departments of the building are reached. To the left, the general office and the secretary's office. The main stairs lead off to the left. Behind these are the lobby and entrance to the lavatories and cloakrooms. At the top is the entrance to the large hall and to the gymnasium, and to he right the public cloakroom and kitchen offices, and also a bicycle store, with entrance from Frank-street. On the first floor is a square gallery and a large hall; also minor hall, reading-room, parlour, and games room. The top floor comprises a central lounge, with seats round, from which access is obtained to the rooms for the athletic, camera, boys', and cycling clubs; also a room for the choral society, committee-room, large and small classrooms, and the Christian Workers' parlour and library. Block B contains the large hall, about 62 ft. square, with entrances at both ends from Frank-street, and also another entrance from the central hall. Below the platform accommodation is provided for ante-room, lavatories, cloakroom, speakers' room, and ladies' room. The large hall will, with galleries and platform, accommodate about 1,200. Block C contains the gymnasium, with open lantern roof. This would be connected with the lavatories and dressing-room, and has also a separate entrance to a back lane in case of emergency. The complete scheme will involve an outlay of 12,000*l.*; but at present the committee have arranged for the carrying out of the front block only. The contract for the first block has been given to Messrs. M'Laughlin and Harvey, and the plans have been prepared, and the work is being superintended by, Mr. Wm. J. W. Roome, architect, Belfast.

BURY PARK CONGREGATIONAL CHURCH, LUTON, BEDS.—The opening of this Church took place recently. The building is designed in Perpendicular Gothic, freely treated. A square tower forms a feature at the corner of the block. The accommodation provided is as follows:—468 adults on ground floor and 65 in end gallery. Total, 533; or a mixed congregation of about 610 persons, with possible future galleries in transepts and over-vestries for 160 more sittings, or a final total of over 800 persons in a mixed congregation. A church parlour, vestries and other conveniences are provided. The buildings to be faced with red brick, with Bath-stone dressings. The joinery internally will be stained transparent green, and wax polished. There are red granite columns supporting four crossing arches, and the lead lights are richly coloured. The building is roofed with green slates. Heating is by low pressure pipe apparatus. The contract is let to Messrs. T. and E. Neville, of Luton, and amounts to 4,429*l.* The architects are Messrs. George Baines and R. Palmer Baines, Clement's-inn, Strand, London, W.C.

SOUTHPORT BUILDING TRADE.—In his annual report of the Highway Department, Mr. R. P. Hirst, the Borough Surveyor of Southport, states that the number of plans approved during the year showed an increase as compared with last year, principally in dwelling-houses. The number of buildings certified on completion, however, shows a considerable decrease. The number of detached dwelling-houses built during the year was 33, as compared with 17 last year and 29 in the year ending March 31, 1901. On the other hand, only 70 semi-detached dwelling-houses were built as compared with 75, 101, and 127 respectively in the three previous years.

BUSINESS PREMISES, READING.—The new block of business premises, which are being built in Reading for Messrs. McIlroy, Ltd., are now nearing completion. The new building has a site at the corner of Oxford-street and Cheapside, having a frontage of 260 ft. to the former and 200 ft. to the latter. It is six stories high. The premises have been constructed of fireproof material, and are lighted throughout by electricity. Messrs. J. Morris and Son, architects, designed the building in the Renaissance style, freely treated. Mr. H. W. Goodwin is the builder.

SCHOOLS, BELFAST.—The school buildings which have been erected in connexion with Macrory Memorial Church, Duncairn-gardens, were opened on the 6th inst. The buildings adjoin the church, and are constructed of red brick, having a flat roof, which will be utilised as a playground. The building consists of a senior school, an infants' school, and two classrooms, the entire space affording accommodation for 350 children. The building contract was carried out by Mr. Robert Ewing, the architect in charge being Mr. Frazer.

SANATORIUM, EASTBY, YORKSHIRE.—The Bradford Union Phthisis Sanatorium at Bardon Moor, Eastby, was opened on the 3rd inst. The portions of the institution which were opened and are ready for occupation are the western pavilion and the administrative block. Work on the second pavilion has not got beyond preparing the foundation. The administrative buildings, two stories in height, are centrally situated at the rear of the patients' quarters, and are built of local stone. They comprise rooms for the resident medical officer, the matron, and the domestics. The patients' pavilion, except the central portion, over which there is a room for nurses, is only one story high. It contains four single bedrooms, four two-bed-rooms, one four-bed-room, one five-bed-room, and a dining-room. The other wing, when built, will have similar accommodation. Each room has a window in front opening the full width, also a large unglazed window at the back opening into a corridor that runs the length of the building. This corridor, which is glass-screened, is intended to protect the patients' rooms from the severe weather of the winter months. The windows are arranged so as to allow the air free play through the pavilion. The structure is of wood, and is roofed with red tiles. All the interior walls have been lined with fire-proof blocks, and only the floors are inflammable. Automatic sprinklers for extinguishing fire have been provided. The heating is by means of hot water, on the low-pressure system; and electric light, provided by an oil engine, dynamo, and storage battery, will be available throughout the establishment. The buildings are being constructed from the plans of Mr. Fred Holland, Engineer and Architect to the Board, of Bradford; and the contractors are:—Mason, Mr. E. Balmforth, Bradford; joiner, Mr. A. H. Shaw, Skipton; plumbers, Messrs. W. and J. Harrison, of Keighley, and Mr. C. Horner, of Skipton; plasterer, Mr. J. Greenwood, Cross Hills; slaters, Mr. H. Thornton, of Skipton, and Messrs. Thomas Nelson and Sons, Bradford; painters, Messrs. E. Harland and Sons, Bradford; heating engineer, Mr. G. H. Mason, Skipton; electricians, Messrs. Smith and Crofts, Bradford. The consulting electrical engineer was Mr. S. W. Cuttriss, of Leeds.

CHURCH, ELLAND, YORKSHIRE.—The new Church of All Saints, which has been erected in the upper part of Elland, was dedicated on the 4th inst. The original idea was to erect a church at a cost of 15,000*l.*, capable of accommodating about 800 worshippers, but it was found impossible to carry out the whole scheme at once, and it has therefore been limited for the present to the erection of chancel, three bays of the nave, and a side chapel. This will accommodate about 400 worshippers. The style is Early English, and the work has been carried out under the supervision of Mr. G. H. Fellowes Prynne, architect, of Westminster. The materials used are local stone for the external walls, lined internally with red brick with stone dressing, roofed with red tiles. The contractors for the work are Messrs. J. Charnock and Sons, Halifax. Up to the present the church has cost between 11,000*l.* and 12,000*l.*

SANITARY AND ENGINEERING NEWS.

A NEW CANAL IN THE MIDLANDS.—A survey is being made in respect of a projected scheme for the construction of a ship-canal from Mid-Cheshire into the Potteries District, and so to Wolverhampton and Birmingham. The proposal relates to an extension, for the transit of steamers of 300 tons burden, from the Weaver Navigation at Winsford Bridge, near Over, in Cheshire, which terminates northwards at Weston Point, where the Weaver flows into the Mersey. The new line of communication would in effect supplant the present small canal, and afford greatly increased facilities for developing the inland pottery, coal, stone, and other trades, by means of through transit to Liverpool and Manchester, and at the same time open out southwards the salt and chemical traffic of the Weaver Navigation.

BRIDGE, ABERAVON.—The Aberavon Corporation, with a view to developing the lower part of the town, and also with the idea of connecting the Port Talbot Docks (which are in the borough of Aberavon) with the town, deemed it advisable to proceed with the construction of a new road leading from Jubilee-road to the River Afon, and then to span the river by means of an iron girder bridge. A Provisional Order was obtained for the construction of the road and bridge in 1899 to cost 12,000*l.*, and the work has now been completed. The bridge is built on the tidal portion of the River Afon. The H.W.M.S.T. is within 4 ft. of the under side of the girders. The total length of the bridge is 340 ft., made up of three spans. The piers and abutments are of local stone, built on concrete, supported by piles driven down 28 ft. below the bed of the river. From the bed of the river to the top of the piers the height is 20 ft. The pillar and cutwater caps are of granite. The superstructure is composed of six steel box girders and 40 cross girders riveted and bolted to the box girders. The flooring is composed of steel curved plates riveted to cross girders, covered with 6 in concrete, and finished with a layer of asphalt. The road from Victoria-road to the bridge is 420 yards in length. A portion of the road is made through a pool, with an embankment 16 ft. in height. The carriageway is made of 9 in. bottom ballast and 6 in. limestone metalling. The engineer for road and bridge was Mr. J. Roderick, Borough Surveyor. The contractors for the masonry, etc., were Messrs. Clarke, and Co., Cardiff; and the contractors for the steel work only, Messrs. Gilbert Thompson and Co., Birmingham. The road was made by the Corporation, under the supervision of their Surveyor.

PIER, WESTON-SUPER-MARE.—The commemoration pile of the Weston-super-Mare

Grand Pier was driven on the 7th inst. The directors of the company have placed the contract with the firm of pier engineers and contractors, Messrs. Mayoh and Haley, of London. The total length of the pier is 6,600 ft. by 45 ft. wide, and that portion of the pier upon which the pavilion will be erected is 160 ft. wide. The pier will be of the lattice girder type. The pavilion will be of steel and wood, with four corner turrets and central dome, the dimensions of pavilion being 150 ft. by 90 ft. wide. The main hall, 85 ft. by 70 ft., is arranged to seat 2,000 persons. The stage is 62 ft. by 23 ft. The entrance hall is 42 ft. by 28 ft. The ground-floor refreshment-room is 33 ft. by 22 ft., the one on the balcony floor being the whole width of the building, and its depth being 20 ft.: it can be also used as a reading-room and lounge. An electric tramway will run the entire length of the pier. At the main entrance two buildings, each 50 ft. long by 12 ft. wide, will contain ladies' and gentlemen's lavatories, pier master's office, stores, switch-room, pay office, etc., with verandah over gates and turnstiles, etc. The consulting engineer for the pier is Mr. G. N. Abernethy, of Westminster.

AERIAL ROPEWAY, ABERFELDY, N.B.—An aerial ropeway has been opened at Aberfeldy, N.B. It was built by Messrs. John M. Henderson and Company, engineers, Aberdeen. The District Committee have, since the closing a year or two ago of the Ladywell Quarry, near Dunkeld, experienced difficulty in procuring road metal in certain parts of the district. There is no quarry in the Murthly or Dunkeld neighbourhood, while the nearest one to Pitlochry is four miles away. All the whinstone quarries in the district are situated high upon the moors, and consequently considerable haulage over the roads is entailed in placing the metal on the main roads, which bear the bulk of the traffic. The Committee, acting on the advice of their Road Surveyor, Mr. William Bell, C.E., resolved to construct an aerial ropeway from Gateside Quarry to Aberfeldy railway station, the intention being to distribute the metal from Aberfeldy station to points between Struan in the north and Murthly in the south, and to put it on the roads in proximity to the railway system as found necessary. The ropeway is carried on steel trestles, 37 in number, varying in height from 30 ft. to 40 ft., and placed at distances of about 100 yards apart. The system consists of an endless steel rope running over pulleys on the trestles. Skips, or buckets, are filled direct from bins underneath the stone-breaker at the quarry end, and the metal is delivered into waggons or carts at the railway station end as required. There is a fall of 1,000 ft. from the quarry to the station, so that the full skips assist in hauling up the empties. The skips, 100 in number, are of steel, and carry 3 cwt. of metal each. They travel at a speed of about four and a half miles per hour, and are placed upon the rope at intervals of about 100 yards. The capacity contracted for was 80 tons of stone per ten-hours day, but the actual capacity is about 120 tons per day of ten hours.

ARTESIAN WELLS IN LONDON.—At the new offices now in course of erection for the Royal London Friendly Society, Finsbury-square, Messrs. Alfred Williams and Co., of Artesian Works, Bow, have just obtained from a 6 in. internal diameter steel-lined artesian well a supply of over 2,000 gallons per hour, which has been proved by analysis to be wholesome drinking water of high quality. The following strata were passed through:—

Blue clay	68
Mottled clay	16
Mottled clay and sand and hard pebbles	10
Hard pebbles and green sand	8
Hard green sand and pebbles	22
Grey sand	29
Pebbles	1
Chalk and flints	296
	450 ft.

The pumping plant consists of a deep-well pump, which is lowered down the bore-hole about 100 ft. below water level. The pump rods are balanced and connected to worm gears running in oil baths and mounted on ball bearings. This arrangement is connected direct to an electric motor, which is connected to the mains of the Electric Supply Co. No driving belt is required, and all that is necessary is to switch on the current, and the water is delivered into storage tanks on the roof, which in this instance will be about 90 ft. from ground level.

FOREIGN.

FRANCE.—M. Guillaume, Director of the Académie de France at Rome, has just completed a marble statue of Thiers, to be placed in a gallery at Versailles reserved for statues of Presidents of the Republic. The statue is placed on a pedestal of grey marble, with small figures at the angles symbolising "History" and "Eloquence."——The Municipality of Limoges have unfortunately decided to demolish the ancient ramparts of the town, and also the Pont St. Etienne, dating from the fourteenth century. The Municipality of Bayonne have also determined to demolish a portion of their ancient ramparts, notably the fortified gateway, adorned with some good sculpture of the seventeenth century; it is the gate at the entry to the bridge over the Adour.——A new casino is talked of at Annecy, of which M. Durel is to be the architect. The scheme includes also the repair of the existing theatre, and the building of a bridge in the rear of the theatre; representing a total outlay of 600,000 fr.——Opposite to the statue of Renan recently inaugurated at Tréguier, there is to be placed a "Calvary," executed by M. Hémots, sculptor, including in the composition a figure of Christ, in red granite, 12 mètres high, and five monumental statues on the pedestal. This monument will be inaugurated in May next year.——The Government has commissioned from M. Graf, the sculptor, two bas-reliefs, intended for the façade of the Museum of Clermont-Ferrand, symbolising on one side Painting and Sculpture, and on the other side Architecture and Archæology.——The Municipality of Bordeaux are about to undertake some extensive public works, including the reconstruction of the Church of Saint Rémi, the transfer of the Hôpital St. Jean, the building of a new Lycée, and new buildings in connexion with the Faculté de Médecine.——A new transporter bridge has been established across the Loire at Nantes, to give more direct access to the State railway terminus. It is 141 mètres in length, with two pylons 76 mètres in height. The roadway is 50 mètres above the highest water level of the river, and a fine view of the city and neighbourhood is obtained from it.——M. Gérand has been elected president of the Société des Architectes of Bordeaux.——The Municipal Council of Paris has decided that the name of "Charles Garnier" should be given to the square formed at the meeting of Rue Auber and Rue Scribe, to the right of the site on which the Garnier Monument is erected.——The Service de la Voie Publique of Paris has entered a formal opposition to the erection of the monument to De Musset, by M. Mercié, on the site in front of the Théâtre Français, on the ground that the small *place* is already encumbered with monuments, and that the Voie Publique Department intends to form there a subterranean latrine in imitation of those in London.——The death is announced, at the age of 73, of the landscape painter Camille Pissaro, one of the founders of the Impressionist school, who acquired a legitimate reputation as painter, lithographer, and etcher. He was a pupil in the first instance of Corot, but went into Impressionism as a disciple of Manet, and devoted his talent to painting rural life, as well as the landscapes of Normandy and the Isle de France. The Luxembourg Museum includes, in the Caillebotte collection, several pictures by this remarkable painter, whose three sons are all artists of recognised talent.——M. Edmond Peigné, editor of the *Journal des Travaux Publics*, has died, at the age of 70.——The death is also announced, at the age of 55, of M. Brisson, Architecte-Voyer of the Third and Tenth Arrondissements of Paris; that of M. Lafou, member of the Société Centrale, at the age of fifty-four; and that of M. Naveau, member of the Société Nationale des Architectes Français, at the age of sixty-three.

GERMANY.—Two memorials to the Emperor Frederick have lately been unveiled. One, in Berlin, at the entrance of the Thiergarten, is composed of two groups of figures—the Emperor supported on the right and left by Field-Marshal Count Blumenthal and the naturalist Helmholtz, and the Empress Frederick with the accompanying figures of the philosopher Zeller and the scientist von Hoffmann. The other memorial, at Potsdam, consists of a single figure of the Emperor in the uniform of the Dragoons.

AUSTRIA.—The Church of St. Canisius in Vienna is completed. The architect is Herr von Neumann. The Church is built mainly in Romanesque style but with some details of Gothic character. On the high altar is a painting of Christ on the Mount of Olives, by Baroness Oer.——The sculptor Herr Franz Erler, has celebrated his fiftieth anniversary as a member of the Vienna Academy. He has attained his seventy-fourth year.

MISCELLANEOUS.

PROFESSIONAL AND BUSINESS ANNOUNCEMENTS.—Mr. F. G. Minter, builder and contractor, has removed his works from Page-street, Westminster, to Ferry Works, High-street, Putney, S.W.——Messrs. Waygood and Co., lift manufacturers (London), have removed their Glasgow offices from 94 Hope-street to 116, Hope-street, Glasgow.——Mr. George Evans, surveyor, has removed from Adelphi House, 10, Duke-street, W.C., to 24, Hazlitt-road, West Kensington, W.——The partnership hitherto subsisting between Mr. W. H. Waterman and Mr. A. A. Abrahams, under the style of Messrs. Waterman and Abrahams, architects and surveyors, of 7, Cullum-street, Fenchurch-street, E.C., has been dissolved. Mr. Abrahams will in future continue to carry on the business at the same address in his own name.——Referring to our recent obituary notice of the late Mr. J. Martin Brooks, Mr. Groome asks us to mention that the style of the firm was changed some twelve months ago to that of "James Brooks, Godsell, and Groome," and that the practice of the firm will be continued under this style.

A TRAP FOR SINKS AND BASINS.—Messrs. Benham and Sons have sent us a price list and illustration of their patent "Access" waste trap for sinks, lavatory basins, etc. It is made of cast-iron in two shapes, known as "Angle" and "Vertical," the first having the outlet horizontal like a P-trap, and the second having it vertical like an S-trap. In both cases the inlet and outlet are connected into a drum-like chamber, one side of which is sealed with an inspection cover, which is easily removed and refixed by means of two brass fly-nuts. The angle or P-trap appears to be the more satisfactory of the two. Judging from the illustration, however, we should say that the vertical trap will not be as clean as the ordinary drawn-lead S-trap.

BAMBURGH CHURCH, NORTHUMBERLAND.—A new stained glass window, representing St. Cecilia, accompanied by two other emblematical figures, has been placed in Bamburgh Church. The window is from the studio of Messrs. Bacon Bros., of London.

A NEW BENCH FOR SASH FRAMES.—Mr. H. White, builder, Stanley-street, Reading, sends us a model of a very good system invented by him for fixing sash frames on the bench for working. Instead of screwing through the frame, which weakens it and does not always hold it as tight as is desirable, he has a bench with a solid block at one end, against which the frame is butted. Two metal arms carrying transverse screw-clips project from each end of the block, and by screwing on to the frame it is held tight at this end. To hold the other end of the sash frame there are two screw clamps on bearers fixed to the bench, working horizontally on the central axis of the bench and facing each other; these are screwed up in opposite directions to the top bar of the sash, which is tightly held between them. The end of each screw has a flat metal disc which bears upon the wood. The contrivance is, like most really useful things of the kind, perfectly simple in its action.

SALFORD HOUSING SCHEME.—The proposal of the Salford Corporation to build workmen's dwellings on land in Seaford-road, Pendleton, was the subject of a Local Government Board inquiry in the Salford Town Hall on the 13th inst. by Major C. E. Norton. The application of the Corporation was for sanction to borrow 47,737*l.* under the Housing of the Working Classes Act, 1890, for the purchase of the site and the erection of houses. The Town Clerk, Mr. L. C. Evans, in his opening statement, explained that the Corporation, under an order of the Local Government Board of 1900, were bound to provide accommodation for 1,500 persons who were dispossessed of their homes by the demolition of insanitary property in various areas. The Corporation had already, by several schemes, provided housing for 2,432 persons, and had therefore exceeded their obligations. One of the sites on which, under the order, the Corporation had to build houses was known as Block 3, a piece of land off Chapel-street, near Trinity Church; but after an inquiry, in December, 1901, the Local Government Board relieved the Corporation of the obligation to build on this particular site, on condition that they provided dwellings upon the Seaford-road site. It was the proposal to fulfil the condition which was the subject of the present inquiry. The scheme prepared provided accommodation for 1,155 persons. When this had been carried out, the Corporation would have provided for 3,587, or for 2,087 more than they were obliged to. The Seaford-road site had already been approved of by the Local Government Board, so that he understood the scope of the inquiry that evening was limited to the details of the scheme and the suitability of the proposed buildings. Mr. Corbett, the Borough Engineer, explained the scheme.

THE ROMAN STATION AT WILDERSPOOL.—A meeting was held on the 13th inst. of the Lancashire and Cheshire Antiquarian Society at the Chetham Library, presided over by Mr. W. E. A. Axon. The recent excavations on the site of the old Roman station at Wilderspool, near Warrington, have resulted in the discovery of remains of buildings and workshops and a cobble-paved courtyard. There were evidences of jewellers' and brass founders' furnaces, showing clearly the occupations of the people of the ancient Roman Civitas; and a feature of the discovery was that these remains existed at a

very slight depth below the surface—in some cases not more than 1½ ft. to 2½ ft. The remains found were chiefly fragments of earthenware, bronze and other ornaments, silver coins of Trajan, Hadrian, etc., and some cups and dishes nearly complete. The collection is housed in the Warrington Museum.—The thanks of the meeting were given to Mr. T. May for a report on the subject.—Other business before the meeting consisted of a paper by Mr. William Harrison on the opening of the original Birmingham and Manchester Railway.—Mr. Tallent-Bateman exhibited and presented to the Society a series of old engravings of Lancashire and Cheshire halls; and the Chairman exhibited a packet of Jacobite documents, letters, etc., relating mainly to the events of 1745.

SCOTTISH NATIONAL GALLERY.—The Departmental Committee which recommended the erection of the new National Gallery for Scotland in Edinburgh has under consideration a site for the gallery. The land in question is that occupied by the Royal High School at the foot of the Calton Hill. So far the matter has not gone beyond the inquiry stage, but the results of measurements made by Mr. Blanc, R.S.A., of both the High School and the present National Gallery buildings have been laid before the members of the Board of Manufactures and the Departmental Committee. The superficial floor space of the buildings occupied by the National Gallery and the Royal Scottish Academy is 12,490 ft., while the floor area of the main buildings of the Royal High School, with its fine central hall, amounts to 13,914 ft. By taking in the recently-erected gymnasium this area could be increased to 22,810 superficial feet. There are also at the Royal High School other buildings which give an additional area of 2,346 ft., which might be suitable for minor exhibitions, and there are possibilities of extension of the main building which would give 3,000 to 4,000 additional superficial feet of space. —*Morning Post*.

ACETYLENE BLOW-PIPE.—The application of acetylene gas to the blow-pipe has recently been made, and an article in *Le Génie Civil* sets forth the advantages of this new departure. One of these is the very high temperatures, which are in the neighbourhood of 4,000 deg. F. Oxygen is used in connexion with acetylene, and being of higher calorific power than hydrogen accounts for the increase of temperature. The lower cost of acetylene as compared with that of hydrogen is also important where the blow-pipe is to be used for any length of time. The flame can be easily regulated as to its power, for the brilliant illumination given by acetylene renders the effect of the different quantities of oxygen immediately visible, the reverse being the case where hydrogen is employed. Tests made with the new process show welded steel bars to have a tensile strength of 49,770 lbs. per square inch.

SCREEN, PARISH CHURCH, BERKHAMSTED.—The old screen in this church has been enriched by the filling-in of its lower panels by fourteen carved figures. The work has been carried out by Messrs. Harry Hems and Sons, of Exeter.

LIFTS.—The new Savoy Hotel extensions will be equipped with nineteen "Otis" electric elevators. The installation comprises five powerful passenger elevators, four luggage elevators, and ten service elevators. All are electric, with "Otis" controllers, and, with the exception of two or three smaller short rise ones, the speed of the elevators will range from 250 ft. to 300 ft. per minute and upwards.

DISPLACEMENT OF PERSONS OF THE WORKING CLASS, ST. PANCRAS.—The Housing of the Working Classes Committee of the London County Council reported as follows at Tuesday's meeting of the Council:—"In 1899 our attention was called to a small insanitary area in Brunswick-street, now called Tonbridge-street, St. Pancras. The site appeared to be one which should be dealt with under Part I. of the Housing of the Working Classes Act, 1890, and we therefore entered into negotiations with the freeholders with a view to securing their co-operation in carrying into effect a scheme under the provisions of that part of the Act. These negotiations for various reasons proved abortive, and no further steps were taken in the matter. The area, which is bounded on the east by Tonbridge-street, on the south by Cromer-street, and on the north and west by the rear of the premises in Hastings and Judd streets, was until recently occupied by about seventy houses, accommodating when fully let about 500 persons of the poorer classes. The population in March, 1900, was, however, only 247. During last summer the then owners displaced the occupants of the houses on the area, except those of Peace-cottages and Brunswick-buildings, which were subsequently closed by magistrate's order, and leased the property to the East End Dwellings Company, Ltd., who have since demolished the whole of the houses for the purpose of erecting dwellings for the working classes similar to those erected by them on the adjoining site in Argyle-place. In a few cases accommodation was found for the persons displaced in the vicinity, but the majority of those displaced have left the neighbourhood. The dwellings to be erected by the East End Dwellings Company will afford accommodation for about the same number of persons as the buildings demolished. The accommodation will, however, be of a better class, and the rents will be somewhat higher. It should be noted that, owing to the fact that the whole of the leases expired at the same time, the cost to the freeholders of dealing with the area has been greatly reduced, and it is no doubt partly owing to this fact that it has been possible for the site to be redeveloped for the accommodation of persons of the working class."

THE NIGHTINGALE-STREET SCHEME.—We take the following from the last issue of the "Sanitary Chronicles of the Borough of Marylebone":—"The greater portion of the Nightingale-street area has now been cleared, the general plan of the buildings to be erected is prepared, and the work of construction will shortly be commenced. It may be well to state that the action of Lord Portman is taken by virtue of a 'Provisional Order,' which is as much an Act of Parliament as any one of the general Statutes. The chief powers and duties under this Order are as follows:—

'5. The existing buildings constituting the Improvement area shall be taken down and removed, and new dwellings upon the said lands, or on some part or parts thereof, shall be erected by the Viscount Portman as may be determined from time to time in that behalf by the (London County) Council, with the approval of one of his Majesty's Secretaries of State. The new dwellings shall be constructed in such manner as to position, elevation, size, design, and extent of accommodation as the (London County) Council, with such approval as aforesaid, shall prescribe or approve, and to their satisfaction, so as to afford in the aggregate suitable accommodation for not less than 576 persons of the working classes.

Such dwellings shall be furnished with such water-closets, sinks, water supply, and other proper sanitary arrangements as the Council shall prescribe and to their satisfaction. Such of the lands constituting the Improvement area as shall not be required for the purpose of providing accommodation as aforesaid for 576 persons of the working classes may be formed or laid out as an open space or recreation-ground for the use of the residents in the new dwellings to be erected by the said Viscount Portman. Viscount Portman shall carry this scheme into execution in accordance with, and subject to, the provisions of the Housing of the Working Classes Act, 1890, and this scheme, and subject to such modifications therein, or additions thereto, as may be prescribed and made under the authority of the said Act.

6. The following street shall be stopped up and form part of the Improvement area—viz., the whole of Nightingale-street.

The last section of the Order, abolishing Nightingale-street, will render alterations of the existing Nightingale-street sewer a necessity; the sewer not only receives Nightingale-street sewage, but also that of the Board School and some six houses in Capland-street. If the sewer should have to be removed, provision must be made by the Local Authority for the drainage of the houses now draining into the sewer and not included in the scheme."

SIAMESE TEAK EXPORTS.—In an official Report to the Foreign Office on the trade of Bangcock, Mr. Vice-Consul Lyle mentions that last year the export of teak proved remarkable, the Customs returns showing 56,649 tons to have been exported, valued at 348,944*l*. This was considerably above the average of the last five years, and 108,080*l*. in excess of 1901. The quantity taken by the United Kingdom was 1,195 tons. As to prices during 1902, Europe squares varied from 8*l*. to 9*l*. per ton, f.o.b., and Europe planks from 9*l*. to 10*l*. The better class of India squares brought from 4*l*. to 4*l*. 10s. Prices in the early part of the year were poor, but a shortage in the Burmah supplies caused a considerable advance in price, especially for timber of Europe quality. Europe shipments have, however, dropped from 13,157 tons in 1901 to 8,217 tons in 1902. This drop may be due to the generally poorer quality of the timber now worked. It is by no means suggested that the stock of teak is becoming attenuated, but the closing of forests for conservation, and the consequent reduction of area from which to select, offer the forester a greatly lessened opportunity of selection.

MAHOGANY FROM LAGOS.—The Blue Book of the Colony of Lagos, prepared by the Hon. C. H. Harley Moseley, C.M.G., for the year 1902, has just been received. It states, *inter alia*, that in regard to mahogany, the year was a very satisfactory one—the most satisfactory, in fact, in the history of the mahogany trade of the colony. Large quantities were exported, and record prices were obtained at the auctions held throughout the year. Owing to short supplies of Cuban and American mahogany, African wood was in great demand, both in England and America, and Lagos timber in particular was largely bought. Although high prices and keen competition ruled in Lagos, the exporters made fair profits, the gradual rise of market in England all the year helping them considerably. Many logs which in previous years it would not have paid to ship were exported during 1902, and found keen buyers in Europe. The prices per superficial foot, starting at 1d. in January and ½d. in February, rose by October to 1½d., and by December to 1¾d.

ABBEYS AND CATHEDRALS.—On the 10th inst., at Owens College, Manchester, Professor Capper, concluded his series of lectures on the architecture of Abbeys and Cathedrals. The lecture was on the "Relationship between Cathedral and Abbey." Just as the twelfth century, he said, was the century of the abbeys, the thirteenth was the century of the cathedrals. The great cathedrals of the thirteenth century in France represented a movement of revolt; they were built in response to an outburst of national enthusiasm and national feeling which was combined with great religious zeal and fervour. Nowadays it took a whole nation to build a cathedral, but in those days comparatively small areas, such as Paris, Rouen, and Amiens, erected these edifices, which might be taken as representative of an outburst of national life, as evolved in local areas. Though more or less on the typical cruciform plan, these cathedrals were designed to suggest thoughts embodied in what were perhaps the finest halls in existence—single vast spaces which were roofed over, and produced a sense of unity as though they rose out of the cities which they typified. In England, Winchester, Canterbury, Durham, and other cathedrals were abbeys at the same time, but the French cathedrals had nothing to do with the French abbeys. They were built rather in defiance or in rivalry of the abbeys, expressing, if anything, antagonism to monastic orders. Beautiful as English cathedrals were, they were very different from the French, and he thought that was because of their history. For instance, Canterbury was both a cathedral and an abbey. The eastern extension was built to accommodate the monks. There were really two churches in one—the church of the laity, or the people, was the western portion, and the church of the monastery, or the monks, was the eastern portion. The result was to make English churches very long. He did not think the English cathedrals could compare with the French in the unity of design to which he had referred, but they had a charm and beauty all their own. He referred particularly to the way in which they were grouped round the central tower. They would see how it was that so many Benedictine abbeys were preserved, and how it was that the Cistercian abbeys were not. The reason was that the Benedictine abbeys were built in cities, in commanding situations, and they entered into the life of the people, whilst those of the Cistercians were in remote districts. It might have been that at the Norman Conquest the intention was to hold the country by means of the Church as well as by force of arms, but the result had been that the abbey churches, even when the abbeys themselves were suppressed, were still in existence. They were the churches of the people, of the dioceses, and though the abbey itself decayed the church remained. That applied to quite a number of priory churches also, which were at once priories and parish churches.—At the close of the lecture, on the proposition of Dr. Hopkinson, a hearty vote of thanks was accorded to Professor Capper.—*Manchester Courier*.

WESTMINSTER CITY COUNCIL.—At the meeting of the Westminster City Council on Thursday last week, the Finance Committee submitted an estimate of certain paving works, etc., necessitated by a settlement in connexion with the tunnel of the Metropolitan District Railway Company at Eccleston-street. The estimated cost was 950*l*., of which the Railway Company have agreed to pay 200*l*. The question of the payment to be made by the Company is to be reconsidered, however. The Works, Sewers, and Highways Committee also reported on this matter, but the matter was referred back for further consideration. The last-named committee reported also on a plan submitted to them by the Engineer to the London County Council, showing the proposed paving of Kingsway and Aldwych. The Engineer stated that in view of the fact that the roadway of that portion of Kingsway within the Borough of Holborn would be paved with asphalt, it was proposed to pave the whole of Kingsway to its junction with Aldwych of that material, but with regard to Aldwych and the intersection with Kingsway, wood paving was suggested. The Committee recommended, and it was agreed, to send a communication to the London County Council stating that the City Council had no objection to the plan of paving Aldwych, but that from experience they had found wood paving preferable to asphalt in a street of the character of Kingsway, and hoped that wood blocks would be used for the carriage-way of that street.

COURT OF COMMON COUNCIL.—At the usual Court of Common Council held on Thursday last week at the Guildhall, the following resolution was moved by Mr. Deputy Wilkinson:—"That it be referred to the Bridges Committee to consider and report as to the advisability of the substitution of hard wood or other material for the granite sets now in use on London Bridge."

Mr. Wilkinson had canvassed a large number of cartage contractors and had found that 197 were in favour of granite sets and 750 against.—The Chairman of the Committee said that all due consideration had been given to the matter, and they had decided in favour of granite. The motion was lost.

NEW RAILWAY TO VESUVIUS.—A new railway has been completed from Resina, in the Bay of Naples, to the foot of the cone on Mount Vesuvius, where connexion is made with the old Funicular Railway to the crater. The actual starting point of the new line is Pugliano, between Resina and Naples, which, with the exception of a short section not yet open for traffic, is connected with Naples by an electric tramway. When this short extension is finished passengers will be able to travel by railway from the centre of Naples to the summit of Vesuvius, saving much time and discomfort. The new railway has a total length of 4.7 miles, and is divided into three sections. On the first and third ordinary motor-driven electric cars can run, as the maximum gradient is only about 1:12.5. The second section has a maximum gradient of 1:4, and the use of a rack rail is necessary. The rack rail is constructed on the Strub system, and is similar to that on the line up the Jungfrau. The cars have a seating capacity for twenty-four passengers, and two independent brake systems have been applied, providing ample security. A generating station for the new line has been built and equipped at the foot of Monte Cateroni.

SELF-SUPPORTING WALLS AND PARTITIONS.—A new method, known as the "Pruess System," of constructing walls and fire-proof partitions possesses some features of interest. Walls built in this manner consist of iron, brick, and cement forming one rigid plate. The iron is embedded in cement, and is in the form of hoop-iron placed horizontally and vertically, thus making a complete frame-work, and reinforcing the filling so that it may be able to resist tensile as well as compressive stresses. The distance apart of the hoop-iron layers depends in great measure upon the kind of material used for filling the frame-work, but for brick it is found that a spacing of 1 ft. 6 in. is most suitable. It is claimed that the system is very convenient for facing old buildings with minimum disturbance and maximum efficiency. The new work is not only supported in the usual way from the ground, but is also supported by its metal framing, which is secured to clamps caulked into the old work. The system is not limited to any particular thickness, for it lends itself to the construction of $\frac{3}{4}$ in., 4½ in., 9 in., or thicker walls, and is particularly suitable for hollow walls. The ordinary brick bond can be observed when required, or in the case of thin partitions the panels of the framework can be filled in with thin slabs of fire-resisting material. Owing to the self-sustaining character of the construction, girders are not required over window and door openings. Garden walls are generally built 3 in. or 4½ in. thick, with piers spaced from 10 ft. to 12 ft. apart, and a rolled steel joist is built into the pier to ensure stability. When partitions are formed on this system they afford good ties between floors and ceilings, as the framework is always suitably secured by the end of each hoop-iron. Owing to the comparative lightness of the construction the foundation can be reduced in weight and extent.

CAPITAL AND LABOUR.

BRADFORD PLASTERERS' DISPUTE.—The dispute in the plastering trade of Bradford, which has lasted for nearly a year, promises to come to an end in the near future. Representatives of the masters and the men have met, and decided to submit the case to an arbitrator of the Board of Trade. The origin of the dispute was a notice by the employers to reduce the men's wages from 9½d. to 8½d. an hour, and the men at once retaliated by a demand for 10½d. an hour. The masters also proposed certain alterations to the trade rules. Three hundred men came out on strike, but many of them have since secured work elsewhere. It has been agreed that the arbitrator shall be asked to fix the rate of wages, the masters agreeing to regard 9½d. as the maximum and the men 8½d. as the minimum, that is to say, the arbitrator will be free to fix an intermediate figure if he thinks fit. The subject of the proposed alteration of rules will be referred to his judgment unconditionally.—*Yorkshire Observer.*

PATENTS OF THE WEEK.

APPLICATIONS PUBLISHED.*

26,620 of 1902.—J. H. CARTLAND, H. J. ARNOLD, and J. LILLY: *Apparatus for Raising and Lowering Window Sashes and the like.*

This invention relates to apparatus for raising and lowering window sashes. In the framing at the one side a metallic plate is fixed against which the edge of the sash slides. In this plate is formed a central slot whose length is determined by the length of travel required for the sash. At the upper end of the sash a bracket is attached which passes through the slot and terminates on the other side with a screw nut which engages with a long screw running parallel with the edge of the sash. This bracket is so made and attached that the sash may be readily released from the frame when required. This bracket bears against the inner side of the plate, that is, the weight so to speak of the sash is borne thereat. Upon the lower end of the sash, and at the same side, is placed an anti-friction plate or roller. Hence the sash is hung as it were from the one side and carried on the slotted plate. At the lower end of the screw a pulley device for operating the same—and made adjustable to the different widths of framing—consists of a grooved pulley carried from a bracket plate secured to the front of the frame, which also carries two other groove guide pulleys over which the manipulating cord may pass so that the screw may be operated by means of a cord at the front, and thereby the sash raised or lowered. The pulley at the lower end of the screw is made with a non-circular hole, and preferably of a taper form, which fits on to a corresponding non-circular part formed on or attached to the screw. The said pulley is carried on the bracket plate in such a manner that when the latter is removed from the front, the pulley may come with it, by which means the new cord when required may readily be placed around the said pulleys.

9,557 of 1903.—J. W. CHILDS: *Locks and Latches for Sliding, Folding, Shutting, and other like Doors.*

This invention relates to locks and latches, and consists in constructing a metallic case rivetted together or cast in one piece, with the side of the case movable for the purpose of removing or examining the works. In the case a hooked and weighted latch is provided of a suitable shape formed to fall in position for fastening into a catch plate by its dead weight; the centre or pivot being at the back end of the case. The bolt forming the lock is situated above the latch, and is thrown through a slot either by a tumbler with a square hole to receive a spindle or by a key. The latch is lifted and the door opened by pulling the handle in the direction the door is to be opened. The bolt is constructed with two slits or pins on which a pivotted weighted lever with a turned-down end engages, either holding the bolt when forced outwards for locking purposes, or to hold the bolt in its normal position; the aforesaid bolt and lever being operated by a tumbler or by means of a key. The bolt is provided with projections at the side or at the bottom for the purpose of engaging with a tumbler or key above described.

18,543 of 1903.—W. DALBECK. *Door Locks.*

A door lock consisting in the combination with a port and a follower of ball crank shape, fixing said ball in its opened and closed position, a spring attached at one end to the free end of an arm of said follower, a lever connected to the other end of said spring, and a latch actuated by said lever.

18,888 of 1903.—J. LEVICK: *Manufacture of Flushing Cisterns.*

The manufacture of the outer bell and the containing vessel of automatic flushing apparatus by forming the said parts from ductile sheet metal by spinning or drawing through, or partly by spinning and partly by drawing through, thereby avoiding the formation of seams or joints.

19,016 of 1903.—J. GRESLEY: *Manufacture of Hydraulic Cements.*

The manufacture of hydraulic cements by burning artificially and intimately mingled mixtures of natural or artificial aluminium silicates, which may or may not contain lime or iron oxide, as kaolin and other clays, pozzuolana, etc.; or certain industrial refuses, as slags and the like, on the one hand, with lime especially in form of carbonate, on the other hand, wherein molecules of Sio_2, molecules of A_{12} o_3, and molecules of CaO are mixed in such relation that the number of the lime unities is greater than the sum a+b of the acid unities, and may reach to the sum 2 (a+b), the burning being effected below the sintering temperature of the mixture.

19,453 of 1903.—H. BOLDT and H. MARQUARDT: *Means for Fixing Plugs in Walls.*

Means for securing plugs in walls, consisting of a sleeve having inwardly bent tongues, the free ends of which are bent outwardly to engage in the wall when forced outwards by a plug being driven into said sleeve, and lugs on said sleeve for retaining the plug therein.

19,731 of 1903.—V. L. MCCUSKEY: *Tiling Blocks.*

A tiling or building block, consisting of a hollow block having a recess in its inner face adapted to fit about a studding and having the end of the walls forming it bevelled on lines converging toward the centre thereof.

19,756 of 1903.—H. J. WEEKS: *Stop for Windows and Doors.*

The combination of a bracket having a diametrical recess, a catch fitting said recess, and pivotted near the lower edge of one of its ends therein, and a flat spring secured within the recess adapted to maintain the catch in position when turned upon its pivot at right angles to the bracket, the whole serving as a window stop.

20,056 of 1903.—J. MORRIS: *Automatic Fire Extinguishing Appliances.*

This invention relates to automatic fire extinguishing appliances, and its object is to overcome the difficulty experienced in keeping the valves tight against the varying pressure and water-hammer action in the supply pipes. For this purpose the valve is slightly cupped, and interposed between it and its seat is a stiff but elastic disc, which is caused by the pressure of the water to assume a more or less cup form, thereby pressing its edges against the seat more and more as the pressure increases.

20,161 of 1903.—A. E. C. JACOBSOHN and F. O. WEBER: *Method and Apparatus for use in Sinking Wells, Boring, and like Operations.*

The method of raising earth in well sinking, boring, and like operations in which a vessel closed at the top is forced into the ground through the supernatant water as far as possible, communication between the atmospheric air and the interior of the vessel being then made, the vessel being thereupon forced completely into the earth, communication with the atmospheric air being then closed and finally the vessel drawn up with its contained charge.

23,564 of 1902.—G. A. CHADDOCK: *Doors, Windows, and the like Aperture Closing Devices.*

This consists in providing guides whereby the closing member or door is held against rotation in its upward movement, but guided into an opening and closing swing in its descending movement in such a way that the whole or part of the weight of the closing member is utilised to produce an opening and closing swing in a self-acting manner after the member has been lifted and released.

25,076 of 1902.—E. WILKES: *Locks.*

A lock in which an inward movement of the bolt, while the same is engaged with a lever or levers or tumbler, ensures the movement of a stop or abutment into position, which prevents the further inward movement of the bolt, and thereby relieves the lever or levers and stump of the bolt or the tumbler from pressure.

28,526 of 1902.—I. WROBLEWSKI: *Casement Windows.*

A window with sash frames adapted to be lifted by means of a lever, the said sash frames and window frames being provided at their upper and lower parts and sides with flanged joints, the inclined surfaces of which are adapted to bear automatically against each other under the action of inclined hinges.

245 of 1903.—E. UHLAND: *Water-closet Seats.*

Water-closet seats adapted to be elevated or folded back, in which the seat is connected by a rod with the handle of the flushing apparatus, with the object of elevating the seat simultaneously with the operation of the flush by pulling the handle.

17,220 of 1903.—M. GAEBEL: *Domestic Stoves or Fire Grates.*

A perforated fire-grate lining suspended in the fire-box (or otherwise arranged therein) serving as a protecting screen for a hot-water coil-pipe and for circulating air.

18,002 of 1903.—O. SHULTE-MARMELING and A. SHULTE-MARMELING: *Sash Adjuster or Door Holder.*

A sash adjuster and door holder consisting of a curved serrated bar fixed to one part of the sash or door, and a spring pinion arranged on the other part.

18,490 of 1903.—ALLEN DE VILBISS, Jun.: *Recording Locks.*

In a recording lock, the combination with a key-operated locking bolt, of recording mechanism and means for actuating it through the movement of the key, said mechanism including a time-indicator and a key-indicator.

28,123 of 1902.—M. DIEMLING: *Fire and like Escapes for Windows.*

A fire or the like escape consisting of a window

* All these Applications are in the stage in which opposition to the grant of Patents upon them can be made.

shutter capable of being extended to form a ladder-like communication with the ground.

28,267 of 1902.—J. J. MEAGHER: *Ventilator or Cowl.*

In combination in a ventilator an upright shaft, concentric apertures around said shaft, planes adapted to cause an upward current into the top of said shaft and arranged concentrically around it, and a preferably hollow ring around the orifice of said shaft, forming a funnel-shaped orifice.

25,564 of 1902.—R. H. BROWN: *Street and other Gully Traps.*

A gully or like trap for street and other use, having a vertical or approximately vertical grid or grids, in lieu of, or in addition to, the ordinary surface grid, said vertical grid forming the entrance to a chamber or passage or it might be chambers or passages, leading directly to the trap, so that there is less tendency of the gully being choked, or the water has access to the outlet chamber and trap without passing through the surface grid.

25,569 of 1902.—J. FIELDING: *Apparatus for Making Artificial Stone Slabs and Blocks.*

In the manufacture of artificial slabs and such like articles, the arrangement of a double movable mould working over a single fixed porous sheet and perforated plate, whereby the use of loose sheets of linen-covered zinc is dispensed with.

25,807 of 1902.—L. A. GARCHEY: *Manufacture of Artificial Granite.*

The process of manufacturing blocks of de-vitrified glass intended as substitutes for natural granite and stone in all ways in which such are employed, this process consisting in casting the glass in a heated ingot mould and in allowing it to become de-vitrified by slow and gradual cooling.

25,896 of 1902.—H. L. DOULTON and R. J. PLEACE: *Appliances for the Automatic Discharge of Liquid.*

Means for retaining liquid in a chamber before being automatically discharged, by the adoption of two valves acted upon simultaneously by a ball which floats as the liquid rises, one valve being opened and allowing water to pass to, and the second valve closing the waste pipe from, the tank above. The supply of water, which may be regulated by a third valve if desired, is delivered into the upper tank, causing a valve there to act and allow the escape of compressed air from a siphon fixed in the chamber, which then discharges the liquid.

25,898 of 1902.—H. L. DOULTON and R. J. PLEACE: *Automatic Siphons.*

In connexion with two automatic siphons, the adoption of cylinders of different sizes to allow greater air space in one than in the other, for the purpose of alternate discharge of liquid.

17,801 of 1903.—J. V. DAVIES: *Apparatus for Facilitating Tunnel Construction.*

In an apparatus for facilitating the construction of tunnels, a movable platform partitioning off the bottom of the tunnel, a support for said platform comprising skids or the like movable in said tunnel, and means carried by the platform for transferring tunnel plates or other devices from one end of said platform to the other and over or around spoil that may be thereon.

20,227 of 1903.—P. M. JUSTICE (O'Rourke Engineering Construction Co.): *Tunnels, and in the Method of Constructing same.*

The method of constructing tunnels, which consists in forming a structure adapted to serve as a portion or section of the tunnel, sinking said structure bodily to permanent position and carrying forward the work of excavation laterally from said structure.

20,228 of 1903.—P. M. JUSTICE (O'Rourke Engineering Construction Co.): *Metallic Tunnel Structures.*

A subterranean driven tunnel structure comprising a plurality of substantial cylindrical lining sections incorporated into one structure, and so arranged that the arcs of contiguous sections overlap, each section being composed of a series of segments, the segments along the adjacent sides of contiguous sections being omitted, skew backs upon which the opposing arches and inverts have their bearing, and supports between said skew backs to resist the radial thrust, openings through said supports being provided for inter-communication between the sections.

28,020 of 1902.—J. W. BROCKMAN and H. GREAVES: *Means of Attaching Zinc and other Tiles or Plates to Roofing and other Surfaces.*

The employment in the attachment of tiles or the like to roofing or other surfaces, of a hook, eye bolt, or its equivalent, for the double purpose of securing the head of the lower tile and the foot of the upper tile, by transfixing the former and hooking or engaging the latter.

MEETINGS.

FRIDAY, NOVEMBER 20.

Architectural Association.—Mr. H. M. Cautley on "Farm Buildings." 7.30 p.m.

Sanitary Institute (Lectures for Sanitary Officers).—7 p.m.

Glasgow Architectural Craftsmen's Society.—Mr. J. C. Walker on "Planning and Construction of Burgh Buildings." 8 p.m.

Institution of Mechanical Engineers.—The following Papers will be read and discussed so far as time permits:—(1) "Roofing Existing Shops while Work is Proceeding," by Mr. R. H. Fowler: (2) "Experiments on the Efficiency of Centrifugal Pumps," by Mr. Thomas E. Stanton, D.Sc. 8 p.m.

SATURDAY, NOVEMBER 21.

Junior Institution of Engineers.—Visit to Orchard Dock, Blackwall, to witness a demonstration of fire-extinguishing, &c., by invitation of the Clayton Company. 2.30 p.m.

MONDAY, NOVEMBER 23.

Surveyors' Institution.—Mr. H. T. Scoble on "Industrial Decentralisation, an important factor in the solution of the Housing Problem." 8 p.m.

Society of Arts (Cantor Lecture).—Mr. Bennett H. Brough on "The Mining of Non-metallic Minerals."—I. 8 p.m.

Sanitary Institute (Lectures for Sanitary Officers).—Dr. E. P. Manby, B.A., on "The Hygiene of Byres, Lairs, Cow-sheds and Slaughter-houses, and all places where Animals destined for the supply of Food are kept, and the Hygiene of Markets, Dairies, and other places where Food is Stored, Prepared or Exposed for Sale, and Transported." 7 p.m.

TUESDAY, NOVEMBER 24.

Institution of Civil Engineers.—Mr. H. R. Mill, D.Sc., LL.D., on "The Distribution of Mean and Extreme Annual Rainfall over the British Isles." 8 p.m.

Institute of Sanitary Engineers Ltd. (Lectures in Practical Sanitary Science).—Mr. W. J. Dibdin, F.I.C., on "Sewage Disposal."—II. 7 p.m.

WEDNESDAY, NOVEMBER 25.

Sanitary Institute (Lectures for Sanitary Officers).—7 p.m.

Society of Arts.—Mr. G. F. Parker on "The Universal Exposition at St. Louis, U.S.A., 1904." 8 p.m.

Northern Architectural Association.—Rev. Canon Savage, M.A., on "The Development of the distinctly English Type of Church." 7.30 p.m.

Edinburgh Architectural Association.—Mr. David M. Nesbit on "Warming and Ventilation." 8 p.m.

Institution of Civil Engineers.—Students' visit to the Great Northern Railway: Underground Stations at Finsbury Park. (Train from King's Cross (local) to Finsbury Park, 2.24 p.m.)

THURSDAY, NOVEMBER 26.

Builders' Benevolent Institution.—Fifty-sixth annual dinner, Whitehall Rooms, Hôtel Métropole, Charing Cross, W.C. 6 p.m. (Sir Weetman D. Pearson, Bart., M.P., President, in the chair.)

London Institution.—Sir William Ramsay on "Radium and the Periodic Law in connexion with Recently Discovered Elements." Illustrated. 6 p.m.

Institution of Electrical Engineers.—(1) "The Testing of Electric Generators by Air Calorimetry," by Mr. R. Threlfall, M.A., F.R.S. (2) "The Edison Accumulator for Automobiles," by Mr. W. Hibbert. 8 p.m.

Sanitary Institute (Demonstrations for Sanitary Officers).—Inspection at the Metropolitan Cattle Market, York-road, N. 2 p.m.

SOME RECENT SALES OF PROPERTY:

ESTATE EXCHANGE REPORT.

November 6.—By WM. CLARKSON.

Walthamstow.—26 and 27, Back-rd., u.t. 59 yrs., g.r. 3*l.* 5*s.*, w.r. 35*l.* 1*s.*	£160

By SCOBELL & LAKE.

Canonbury.—3, Compton-rd., u.t. 41½ yrs., g.r. 10*l.*, y.r. 40*l.*	430

By WHITE, DRUCE, & BROWN.

Soho.—55, Greek-st. (S.), f., y.r. 80*l.*	1,850
St. John's Wood.—2, Melina-pl., f., y.r. 80*l.*	1,290

By C. H. & J. W. WILLMOTT.

Shepherd's Bush.—18, Warbeck-rd., f., e.r. 48*l.*	700
26, Brooklyn-rd., u.t. 36 yrs., g.r. 10*l.*, e.r. 80*l.*	500

By EDWARD WOOD.

Lee.—30, Leyland-rd., u.t. 60 yrs., g.r. 18*l.*, y.r. 60*l.*	420
Victoria Park.—125 and 126, Codogan-ter., f., y.r. 92*l.*	910
Camden Town.—50, Torriano-av., u.t. 41 yrs., g.r. 5*l.* 5*s.*, y.r. 46*l.*	420
Finsbury Park.—68, Mountgrove-rd., u.t. 63 yrs., g.r. 13*l.* 13*s.*, y.r. 82*l.*	720

November 10.—By C. H. BROWN.

Pimlico.—32, Sutherland-ter., u.t. 60½ yrs., g.r. 9*l.*, e.r. 65*l.*	680
236, Vauxhall Bridge-rd., f., y.r. 48*l.*	960

By FIELD & SONS.

Ilford, Essex.—61 to 119 (odd), Sheridan-rd., f., e.r. 819*l.*	6,500

By HAROLD GRIPPIN.

Battersea.—144, Bridge-rd. (S), with stabling, u.t. 63 yrs., g.r. 1*l.*, y.r. 165*l.* 10*s.*	900

By HAMILTON, MIALL, & BRAGG.

Kensington.—7, Sterndale-rd., u.t. 73½ yrs., g.r. 8*l.*, y.r. 40*l.*	420
Dalston.—215, Queen's-rd. (S), u.t. 25½ yrs., g.r. 6*l.*, y.r. 43*l.*	355
148, Richmond-rd., u.t. 35 yrs., g.r. 5*l.* 5*s.*, y.r. 38*l.*	300

By ROGERS, CHAPMAN, & THOMAS.

Marylebone.—57 and 59, Cleveland-st. (Regent Residences), u.t. 44¾ yrs., g.r. 40*l.*, w.r. 291*l.* 4*s.* (including mortgage)	1,600

By JAMES T. PEAT (at Reigate).

Reigate, Surrey.—4 and 6, Glovers-rd., f., y.r. 31*l.* 4*s.*	£45
3 and 5, Priory-rd., f., w.r. 27*l.* 6*s.*	29
Fernhill, Surrey.—A freehold cottage and ¼ acre, y.r. 8*l.*	17

By J. BAKER, COOKE, & STANDEN (at Mill Hill).

Mill Hill.—Uphill-rd., eight plots of land, f.	61
Lawrence-st., four plots of land, f.	20

By J. C. PLATT (at Hammersmith).

Hammersmith.—33, The Grove, u.t. 44 yrs., g.r. 6*l.*, e.r. 60*l.*	40

By STEPHEN JACKSON (at Masons' Hall Tavern).

Harrow, Middx.—West-st., The Cricketers' p.-h., f., with goodwill	4,02

November 11.—By BAXTER, PAYNE, & LEPPER.

Bromley, Kent.—Highland-rd., Sunnycourt and 1 a. 1 r., f., p.	3,50
St. Mary Cray, Kent.—High-st., two freehold shops, warehouse, and cottage, also 4 to 12, Lawrence's-yd., y.r. 122*l.* 14*s.*	1,11

By E. H. HENRY.

Streatham.—Dahomey-st., f.g.r.s 97*l.* 10*s.*, reversion in 93¾ yrs.	2,35
Clapham.—6, Offerton-rd., u.t. 64 yrs., g.r. 6*l.* 10*s.*, y.r. 45*l.*	45

By HOWELL, SON, & BONNIN.

Westminster.—15, 16, and 19, Vincent-sq., u.t. 54½ yrs., g.r. 37*l.*, y.r. 235*l.*	2,08

By FRANK JOLLY & CO.

Strand.—28, Wellington-st., and 11, York-st. (S), f., y.r. 261*l.* 10*s.*	8,00

By MARK LIELL & SON.

East Ham.—42, 44, 46, and 48, Rutland-st., f., w.r. 83*l.* 4*s.*	90
13 and 15, Clifton-rd., f., w.r. 40*l.* 6*s.*	36
Tottenham.—130 to 142 (even), Tewkesbury-rd., u.t. 73 yrs., g.r. 24*l.* 10*s.*, w.r. 145*l.* 12*s.*	54

By F. C. SQUIRE & CO.

Sydenham.—37 and 39, Wells-rd., f., y.r. 51*l.*	70
4, Framfield-gr., u.t. 45½ yrs., g.r. 6*l.*, e.r. 28*l.*	15

By PHILIP STOCK.

Brixton.—86, Gresham-rd., f., y.r. 36*l.*	1,05

By WALTON & LEE.

Tooting Graveney.—Mitcham-rd., The Eldon House Building Estate," 3 a. 2 r. 18 p., f.	5,00

By DOUGLAS YOUNG & CO.

Brixton.—28, Elliott-rd., u.t. 59½ yrs., g.r. 7*l.* 10*s.*, e.r. 45*l.*	30

By BLAKE & DANNATT.

Dulwich.—181 and 183, Friern-rd., u.t. 85 yrs., g.r. 12*l.*, y.r. 60*l.*	60
264, Friern-rd., u.t. 58 yrs., g.r. 6*l.* 6*s.*, y.r. 35*l.*	35
New Cross.—3, 5, 7, and 9, Barlborough-st., u.t. 72 yrs., g.r. 26*l.*, w.r. 119*l.* 12*s.*	96
Forest Hill.—20 and 22, Honor Oak-pk., u.t. 66½ yrs., g.r. 9*l.*, y.r. 50*l.*	49

By A. DOWELL (at Edinburgh).

Kincardine, &c., Aberdeenshire.—The Estate of Findrack, 1,950 acres	20,20

November 12.—By HIBBERD & CO.

Harlesden.—14 to 24 (even), St. John's-av., u.t. 94 yrs., g.r. 42*l.*, w.r. 295*l.* 2*s.*	1,80

By C. C. & T. MOORE.

Shoreditch.—13 and 14, Hoxton Market (with workshops), f., e.r 67*l.*	87
Hackney.—22, Rodney-rd., u.t. 68½ yrs., g.r. 7*l.*, e.r. 40*l.*	42
Stratford.—48 to 53, Carpenter's-rd., u.t. 54 yrs., g.r. 25*l.* 4*s.*, w.r. 166*l.* 8*s.*	75
16, The Green, u.t. 70½ yrs., g.r. 5*l.* 5*s.*, e.r. 33*l.* 16*s.*	16
Poplar.—14 and 16, Moness-st., u.t. 69½ yrs., g.r. 8*l.* 10*s.*, w.r. 63*l.* 14*s.*	48

By FAREBROTHER, ELLIS, & CO.

Lambeth.—78, Westminster Bridge-rd., f., y.r. 60*l.*	75
Kensington.—13 and 15, Lisgar-ter., u.t. 77 yrs., g.r. 20*l.*, y.r. 110*l.*	1,05
3, 5, 7, and 9, Stonor-rd., u.t. 77 yrs., g.r. 40*l.*, y.r. 220*l.*	1,77
26, 28, and 34, Edith-rd., u.t. 72 yrs., g.r. 35*l.*, y.r. 185*l.*	1,60
59 and 61, Gunterstone-rd, u.t. 73 yrs., g.r. 24*l.*, y.r. 135*l.*	1,14
12 and 14, St. Dunstan's-rd., u.t. 79 yrs., g.r. 14*l.*, y.r. 80*l.*	80
27 to 37 (odd), St. Dunstan's-rd., u.t. 79 yrs., g.r. 36*l.* y.r. 232*l.*	2,05
15, Margravine-gdns., u.t. 79 yrs., g.r. 6*l.* 10*s.*, y.r. 40*l.*	33
Fulham.—19 and 25, Rostrevor-rd., u.t. 84 yrs., g.r. 12*l.*, y.r. 78*l.*	81

By E. & A. SWAIN.

Notting Hill.—43 to 49 (odd), Portland-rd. (S), u.t. 46 yrs., g.r. 29*l.* 8*s.*, y.r. 150*l.*	1,17

By H. J. BLISS & SONS.

Stepney.—24, Eastfield-st., f., w.r. 23*l.* 8*s.*	26
North Woolwich.—27, 29, and 31, Brookbank Cottages, w.r. 66*l.* 6*s.*; also l.g.r. 12*l.*, u.t. 55½ yrs., g.r. 24*l.*	23
West Wickham, Kent.—7 and 8, Sussex-rd., f., w.r. 31*l.* 4*s.*	24

By STIMSON & SONS.

New Cross.—2 to 20 (even), Lubbock-st., u.t. 62¾ yrs., g.r. 30*l.*, w.r. 263*l.* 18*s.*	1,80
Walworth.—191 and 193, Walworth-rd. (S), u.t. 71 yrs., g.r. 57*l.*, y.r. 170*l.*	1,64
Peckham.—11, Elcot-av., u.t. 76½ yrs., g.r. 6*l.*, w.r. 89*l.*	20
Dulwich.—29, Melbourne-gr., u.t. 70½ yrs., g.r. 6*l.*, y.r. 28*l.*	28
Peckham.—3 to 9 (odd), Haymerle-rd., u.t. 36 yrs., g.r. 20*l.*, w.r. 150*l.* 16*s.*	71
Stockwell.—7 to 15 (odd), Sidney-rd., u.t. 33¼ yrs., g.r. 20*l.*, y.r. 162*l.* 16*s.*	1,23
Streatham.—95 to 105 (odd), Eardley-rd., u.t. 77¼ yrs., g.r. 28*l.* 16*s.*, w.r. 202*l.* 16*s.*	1,45
Brixton.—8, Heitz-rd., u.t. 86 yrs., g.r. 7*l.*, y.r. 40*l.*	45
Kew Green.—Burton's Restaurant, f., y.r. 80*l.*	1,32

By NEWSON, EDWARDS, & SHEPHARD.

Barnsbury.—34, Half-Moon-cres., f., e.r. 55*l.*	66
36, 38, and 40, Half Moon-cres., and 22, Charlotte-ter. (including the Duchess of Kent p.-h.), f., e.r. 168*l.*	3,57

Charlotte-ter., f.g.r.s 72*l.*, reversion in 2½ yrs....	£6,950
57 and 59, Copenhagen-st. (S); 1, 2, and 3, Charlotte-ter.; 48, 49, and 50, Payne-st., f., e.r. 24*l.*	2,350
49, 51, 53, and 55, Copenhagen-st. (S), f., y.r. 100*l.*	2,325
29 to 47, Payne-st., f., y.r. 200*l.*	5,950
Stoke Newington.—52, Filey-av., u.t. 87½ yrs., g.r. 10*l.*, y.r. 65*l.*	620
1, Kyverdale-rd., u.t. 76½ yrs., g.r. 9*l.*, e.r. 55*l.*....	520
25 to 35 (odd) and 41, Kyverdale-rd., u.t. 76½ yrs., g.r. 72*l.*, y.r. 401*l.*	4,080
14, Kyverdale-rd., u.t. 76½ yrs., g.r. 9*l.*, y.r. 55*l.*	500
20 and 22, Aikham-rd., u.t. 76½ yrs., g.r. 16*l.* 16s., y.r. 110*l.*	950
Stamford Hill.—3, Denver-rd., u.t. 86½ yrs., g.r. 7*l.*, y.r. 45*l.*	425
55, Northfield-rd., u.t. 81½ yrs., g.r. 9*l.*, y.r. 60*l.*	600
21, East Bank, u.t. 81½ yrs., g.r. 10*l.*, y.r. 60*l.* ...	650
Pentonville.—2, Rodney-st., u.t. 23 yrs., g.r. 25*l.*, e.r. 124*l.* 16s.	990
Islington.—38, Halliford-st., u.t. 42 yrs., g.r. 5*l.*, y.r. 42*l.*	420
Stoke Newington.—15 and 19, Benthal-rd., u.t. 72 yrs., g.r. 10*l.*, y.r. 68*l.*	730
Hackney.—28 to 31, 36 to 39, Margaret-st., u.t. 11½ yrs., g.r. 45*l.*, w.r. 197*l.* 12s.	300
Haggerston.—10, Cester-st., f., w.r. 36*l.* 8s.	310
Tottenham.—94 and 96, Tynemouth-rd., f., w.r. 62*l.* 8s.	525
Tynemouth-rd., two freehold building plots ...	685

November 13.—By A. & A. Field.

Forest Gate.—53 Suffolk-st., f., w.r. 20*l.* 16s.	220
73, Odessa-rd., u.t. 50 yrs., g.r. 2*l.* 10s., w.r. 32*l.* 10s.	170

By Hards & Bradly.

Deptford.—250 to 256 (even), Lower-rd., area 23,580 ft., u.t. 62 yrs., g.r. 12*l.*, y.r. 156*l.*	1,100

By Hillier & Parker.

Old Ford.—74, 76, and 78, Usher-rd., f., w.r. 126*l.* 2s.	1,100

By Rider & Sons.

Notting Hill.—28, Kenley-st., u.t. 38½ yrs., g.r. 4*l.* 10s., w.r. 39*l.*	185
15, Brewster-gdns., u.t. 80 yrs., g.r. 5*l.*, y.r. 36*l.*	350
1 and 3, Lionel Mews, u.t. 67 yrs., g.r. 8*l.* 8s., y.r. 58*l.*	370

Contractions used in these lists.—F.g.r. for freehold ground-rent; l.g.r. for leasehold ground-rent; i.g.r. for improved ground-rent; g.r. for ground-rent; r. for rent; f. for freehold; c. for copyhold; l. for leasehold; p. for possession; e.r. for estimated rental; w.r. for weekly rental; q.r. for quarterly rental; y.r. for yearly rental; u.t. for unexpired term; p.a. for per annum; yrs. for years; la. for lane; st. for street; rd. for road; sq. for square; pl. for place; ter. for terrace; cres. for crescent; av. for avenue; gdns. for gardens; yd. for yard; gr. for grove; b.h. for beer-house; p.h. for public-house; o. for offices; s. for shops.

PRICES CURRENT OF MATERIALS.

*** Our aim in this list is to give, as far as possible, the *average* prices of materials, not necessarily the lowest. Quality and quantity obviously affect prices—a fact which should be remembered by those who make use of this information.

BRICKS, &c.

	£ s. d.	
Hard Stocks	1 16 6	per 1,000 alongside, in river
Rough Stocks and Grizzles	1 13 0	" " "
Facing Stocks	2 12 0	" " "
Shippers	2 5 0	" " "
Flettons	1 10 0	" at railway depôt
Red wire Cuts	1 13 0	" " "
Best Fareham Red	3 12 0	" " "
Best Red Pressed Ruabon Facing	5 0 0	" " "
Best Blue Pressed Staffordshire	4 4 0	" " "
Do. Bullnose	4 10 0	" " "
Best Stourbridge Fir "r k	4 8 0	" " "

Glazed Bricks.

Best white and Ivory Glazed Stretchers	13 0 0	" " "
Headers	12 0 0	" " "
Quoins, Bullnose, and Flats	17 0 0	" " "
Double Stretchers	19 0 0	" " "
Double Headers	16 0 0	" " "
One Side and two Ends	19 0 0	" " "
Two Sides and one End	20 0 0	" " "
Splays, Chamfered, Squints	20 0 0	" " "
Best Dipped Salt Glazed Stretchers and Headers	12 0 0	" " "
Quoins, Bullnose, and Flats	14 0 0	" " "
Double Stretchers	15 0 0	" " "
Double Headers	14 0 0	" " "
One Side and two Ends	15 0 0	" " "
Two Sides and one End	15 0 0	" " "
Splays, Chamfered, Squints	14 0 0	" " "
Second Quality White and Dipped Salt Glazed	2 0 0	" less than best

	s. d.	
Thames and Pit Sand	6 9	per yard, delivered.
Thames Ballast	6 0	" "
Best Portland Cement	30 0	per ton, delivered.
Best Ground Blue Lias Lime	21 0	" "

Note.—The cement or lime is exclusive of the ordinary charge for sacks.

Grey Stone Lime ..... 11s. 6d. per yard, delivered.
Stourbridge Fire Clay in sacks 27s. 6d. per ton at rly. dpt.

PRICES CURRENT (*continued*).

STONE.

	s. d.	
Bath Stone—delivered on road waggons, Paddington depôt	1 6½	per ft. cube.
Do. do. delivered on road waggons, Nine Elms Depôt	1 8½	" "
Portland Stone (20 ft. average)—Brown Whitbed, delivered on road waggons, Paddington depôt, Nine Elms depôt, or Pimlico Whraf	2 1	" "
White Basebed, delivered on road waggons, Paddington depôt, Nine Elms depôt, or Pimlico Wharf	2 2½	" "

	s. d.	
Ancaster in blocks	1 11	per ft. cube, deld. rly. depôt
Beer in blocks	1 6	" "
Greenshill "	1 10	" "
Darley Dale in blocks	2 4	" "
Red Corsehill "	2 5	" "
Closeburn Red Freestone	2 0	" "
Red Mansfield "	2 4	" "

York Stone—*Robin Hood Quality.*

	s. d.	
Scappled random blocks	2 10	per ft. cube, deld. rly. depôt
6 in. sawn two sides landings to sizes (under 40 ft. super.)	2 3	per foot super. "
6 in. Rubbed two sides Ditto, Ditto	2 6	" "
3 in. Sawn two sides slabs (random sizes)	0 11½	" "
2 in. to 2½ in. Sawn one side slabs (random sizes)	0 7½	" "
1½ in. to 2 in. ditto, ditto	0 6	" "
Scappled random blocks	3 0	per ft. cube "
6 in. sawn two sides, landings to sizes (under 40 ft. sup.)	2 8	per ft. super. "
6 in Rubbed two sides Ditto	—	" "
3 in. sawn two sides slabs (random sizes)	1 2	" "
2 in. self-faced random flags	0 5	" "
Hopton Wood (Hard Bed) in blocks	2 3	per ft. cube. deld. rly. depôt.
" " " 6 in. sawn both sides landings	2 7	per ft. super. deld. rly. depôt.
" " " 3 in. do.	1 2½	" "

SLATES.

in. in.	£ s. d.	
20×10 best blue Bangor	13 2 6	per 1000 of 1200 at rly. dep.
20×12 " "	13 17 6	" "
20×10 best seconds "	12 15 0	" "
20×12 " " "	13 10 0	" "
16×8 best "	7 0 0	"
20×10 best blue Pertmadoc	12 12 6	" "
16×8 best blue Portmadoc	6 12 6	" "
20×10 best Eureka unfading green	15 2 6	" "
20×12 best Eureka unfading green	17 2 6	" "
18×10 " "	12 10 0	" "
16×8 " "	10 5 0	" "
20×10 permanent green	11 10 0	" "
18×10 " "	9 10 0	" "
16×8 " "	6 10 0	" "

TILES.

	s. d.	
Best plain red roofing tiles	42 0	per 1,000 at rly. depot.
Hip and valley tiles	3 7	per doz. " "
Best Broseley tiles	50 0	per 1,000 " "
Do. Ornamental Tiles	52 6	" " "
Hip and Valley tiles	4 0	per doz. " "
Best Ruabon Red, brown or brindled Do. (Edwards)	57 6	per 1,000 " "
Do. Ornamental Do.	60 0	" " "
Hip tiles	4 0	per doz. " "
Valley tiles	3 0	" " "
Best Red or Mottled Staffordshire Do. (Peakes)	51 9	per 1,000 " "
Do. Ornamental Do.	54 6	" " "
Hip tiles	4 1	per doz. " "
Valley tiles	3 8	" " "
Best "Rosemary" brand plain tiles	48 0	per 1,000 " "
Do. Ornamental Do	50 0	" " "
Hip tiles	4 0	per doz. " "
Valley tiles	3 8	" " "

WOOD.

	At per standard. £ s. d.	£ s. d.
Deals: best 3 in. by 11 in. and 4 in. by 9 in. and 11 in.	15 10 0	16 10 0
Deals: best 3 by 9	14 10 0	15 10 0
Battens: best 2½ in by 7 in. and 8 in., and 3 in. by 7 in. and 8 in.	11 10 0	12 10 0
Battens: best 2½ by 6 and 3 by 6	0 10 0	less than 7 in. and 8 in.
Deals: seconds	1 0 0	less than best
Battens: seconds	0 10 0	" " "
2 in. by 4 in. and 2 in. by 6 in.	9 0 0	9 10 0
2 in. by 4½ in. and 2 in. by 5 in.	8 10 0	9 10 0
Foreign Sawn Boards—1 in. and 1½ in. by 7 in.	0 10 0	more than battens.
¾ in.	1 0 0	"
Fir timber: Best middling Danzig or Memel (average specification)	At per load of 50 ft. 4 10 0	5 0 0
Seconds	4 5 0	4 10 0
Small timber (8 in. to 10 in.)	3 12 6	3 15 0
Small timber (6 in. to 8 in.)	3 0 0	3 10 0
Swedish balks	2 15 0	3 0 0
Pitch-pine timber (30 ft. average)	3 5 0	3 15 0

PRICES CURRENT (*continued*).

WOOD.

At per standard.

Joiners' Wood.

	£ s. d.	£ s. d.
White Sea: First yellow deals, 3 in. by 11 in.	23 0 0	24 0 0
3 in. by 9 in.	21 0 0	22 10 0
Battens, 2½ in. and 3 in. by 7 in.	17 0 0	18 10 0
Second yellow deals, 3 in. by 11 in.	18 10 0	20 0 0
" " 3 in. by 9 in.	17 10 0	19 0 0
Battens, 2½ in. and 3 in. by 7 in.	13 10 0	14 10 0
Third yellow deals, 3 in. by 11 in. and 9 in.	15 10 0	16 10 0
Battens, 2½ in. and 3 in. by 7 in.	11 10 0	12 10 0
Petersburg: first yellow deals, 3 in. by 11 in.	21 0 0	22 10 0
Do. 3 in. by 9 in.	18 0 0	19 10 0
Battens	13 10 0	15 0 0
Second yellow deals, 3 in. by 11 in.	16 0 0	17 0 0
Do. 3 in. by 9 in.	14 10 0	16 0 0
Battens	11 0 0	12 10 0
Third yellow deals, 3 in. by 11 in.	13 10 0	14 0 0
Do. 3 in. by 9 in.	13 0 0	14 0 0
Battens	10 0 0	11 0 0
White Sea and Petersburg:— First white deals, 3 in. by 11 in.	14 10 0	15 10 0
" " 3 in. by 9 in.	13 10 0	14 10 0
Battens	11 0 0	12 0 0
Second white deals, 3 in. by 11 in.	13 10 0	14 10 0
" " 3 in. by 9 in.	12 10 0	13 10 0
" " battens	9 10 0	10 10 0
Pitch-pine: deals	16 0 0	18 0 0
Under 2 in. thick extra	0 10 0	1 0 0
Yellow Pine—First, regular sizes	33 0 0	upwards.
Oddments	22 0 0	24 0 0
Seconds, regular sizes	24 10 0	26 10 0
Yellow Pine Oddments	20 0 0	22 0 0
Kauri Pine—Planks, per ft. cube	0 3 6	0 4 6
Danzig and Stettin Oak Logs—Large, per ft. cube	0 2 6	0 3 6
Small " "	0 2 3	0 2 6
Wainscot Oak Logs, per ft. cube	0 5 0	0 5 6
Dry Wainscot Oak, per ft. sup. as inch	0 0 7	0 0 8
¾ in. do. do.	0 0 6½	—
Dry Mahogany—Honduras, Tabasco, per ft. sup. as inch	0 0 9	0 0 11
Selected, Figury, per ft. sup. as inch	0 1 6	0 2 0
Dry Walnut, American, per ft. sup. as inch	0 0 10	0 1 0
Teak, per load	17 0 0	21 0 0
American Whitewood Planks—per ft. cube	0 4 0	—

Prepared Flooring—

Per square.

1 in. cy 7 in. yellow, planed and shot	0 13 6	0 17 6
1 in. by 7 in. yellow, planed and matched	0 14 0	0 18 0
1¼ in. by 7 in. yellow, planed and matched	0 16 0	1 1 6
1 in. by 7 in. white, planed and shot	0 11 6	0 13 6
1 in. by 7 in. white, planed and matched	0 12 0	0 14 0
1¼ in. by 7 in. white, planed and matched	0 14 6	0 16 6
¾ in. by 7 in. yellow, matched and beaded or V-jointed boards	0 11 0	0 13 6
¾ in. by 7 in. do. do. do.	0 14 0	0 18 0
1 in. by 7 in. white do. do.	0 10 0	0 11 6
1 in. by 7 in. do. do. do.	0 11 6	0 13 6

6-in. at 6d. to 9d. per square less than 7-in.

JOISTS, GIRDERS, &c.

	In London, or delivered Railway Vans, per ton. £ s. d.	£ s. d.
Rolled Steel Joists, ordinary sections	6 5 0 ...	7 5 0
Compound Girders, " "	8 2 6 ...	9 5 0
Angles, Tees and Channels, ordinary sections	7 17 6 ...	8 17 6
Flitch Plates	8 5 0 ...	8 15 0
Cast Iron Columns and Stanchions, including ordinary patterns	7 2 6 ...	8 5

METALS.

	Per ton, in London £ s. d.	£ s. d.
Iron— Common Bars	7 10 0 ...	8 0 0
Staffordshire Crown Bars, good merchant quality	8 0 0 ...	8 10 0
Staffordshire "Marked Bars"	10 10 0 ...	—
Mild Steel Bars	8 15 0 ...	9 5 0
Hoop Iron, basis price	9 5 0 ...	9 10 0
" " galvanised	17 10 0 ...	—

(*And upwards, according to size and gauge.)

Sheet Iron (Black)— Ordinary sizes to 20 g.	9 15 0 ...	—
" " 24 g.	10 15 0 ...	—
" " 26 g.	12 5 0 ...	—
Sheet Iron, Galvanised, flat, ordinary quality— Ordinary sizes—6 ft. by 2 ft. to 3 ft. to 20 g.	12 15 0 ...	—
Ordinary sizes to 22 g. and 24 g.	13 5 0 ...	—
" " 26 g.	14 5 0 ...	—
Sheet Iron, Galvanised, flat, best quality— Ordinary sizes to 20 g.	16 0 0 ...	—
" " 22 g. and 24 g.	16 10 0 ...	—
" " 26 g.	18 0 0 ...	—
Galvanised Corrugated Sheets— Ordinary sizes, 6 ft. to 8 ft. 20 g.	12 15 0 ...	—
" " 22 g. and 24 g.	13 5 0 ...	—
" " 26 g.	14 0 0 ...	—
Best Soft Steel Sheets, 6 ft. by 2 ft. to 3 ft. by 20 g. and thicker	11 15 0 ...	—
Best Soft Steel Sheets, 22 g. and 24 g.	12 15 0 ...	—
" " " 26 g.	14 0 0 ...	—
Cut nails, 3 in. to 6 in.	9 5 0 ...	9 15 0

(Under 3 in., usual trade extras.)

[See also page 535.

COMPETITIONS, CONTRACTS AND PUBLIC APPOINTMENTS.

(For some Contracts, &c., still open, but not included in this List, see previous issues.)

COMPETITIONS.

Nature of Work.	By whom Required.	Premiums.	Designs to be delivered
Water Supply Scheme	Clare (Suffolk) R.D.C.	Not stated	Dec. 10
Designs for New Council House & Free Library Bdgs.	Erdington U.D.C.	50*l*., 30*l*., 20*l*.	Feb. 1, '04

CONTRACTS.

Nature of Work or Materials.	By whom Advertised.	Forms of Tender, &c., supplied by	Tenders to be delivered
Culvert, Dublin	G. N. R. Co. (Ireland)	W. H. Mills, Engineer, Amiens-street Terminus, Dublin	Nov. 23
Boundary Walls, &c., Savile-road, Savile Town, Yorks	Thornhill U.D.C.	S. W. Parker, Surveyor, Council Offices, Thornhill	do.
Rebuilding Rum Puncheon & other Premises, Swansea	Mr. W. Williams	H. C. Portsmouth, Architect, 6, Fisher-street, Swansea	do.
Alterations to Hospital, Gallows Plain	Hertford Corporation	W. L. Grant, Architect, Sittingbourne	do.
Road Works, Whiteford-road	Plymouth Corporation	J. Paton, Borough Engineer, Plymouth	do.
Intermediate Schools, Porth	Glam County Council	T. M. Franklin, County Council Offices, Cardiff, Glamorgan	do.
Offices near the Wheat Sheaf Tram Depot, Sunderland	....	F. E. Coates, Architect, 41, Fawcett-street, Sunderland	Nov. 24
Road Works, Pudding Mill-lane	West Ham Town Council	J. G. Morley, Borough Surveyor, Town Hall, West Ham	do.
Street Works, back Collingwood-road, N.	West Hartlepool Corporation	J. W. Brown, Civil Engineer, Town Hall, West Hartlepool	do.
Sunday School, Penwithick Stents, St. Austell	.....	W. J. Jenkins, Architect, Bodmin	do.
Eight Houses, Garden and Clarendon Streets	Consett (Durham) Co-Op. Soc., Ltd.	E. Huntley, Newmarket-street, Consett	do.
Coastguard Station, &c., Aranmore, co. Donegal	Office of Works	Secretary, Office of Public Works, Dublin	do.
Walls, &c., Park Hotel, Glandwr-road, Abertillery	.....	G. Kenshole, Architect, Station-road, Bargoed	Nov. 25
Road Metal, &c.	Erdington (nr. Birmingham) U.D.C.	H. H. Humphries, Engineer, Public Hall, Erdington	do.
Boundary Wall	Swadlincote D.U.D.C.	G. B. Smedley, Civil Engineer, Gasworks, Swadlincote	do.
House, Swansfield Park-road, Alnwick	.....	M. Temple Wilson, Architect, Alnwick	do.
Street Improvement Works, Slauthewy-road	Newport (Mon.) Corporation	R. H. Haynes, Borough Engineer, Town Hall, Newport, Mon.	do.
Sewers, &c. (1 mile)	Bettys-y-Coed U.D.C.	R. R. Owen, Union Offices, Llanrwst	do.
Paving Works, Langton-street and other roads	Gateshead Corporation	J. Bower, Civil Engineer, Town Hall, Gateshead	do.
Sulphate Plant Building at Gasworks	Evesham Town Council	F. H. Fletcher, Engineer, Evesham	do.
Fire Station, Grove-road	Borough of Eastbourne	Borough Surveyor's Office, Town Hall, Eastbourne	Nov. 26
setts, &c.	Haworth (Yorks) U.D.C.	W. Robertshaw, North-street, Keighley	do.
Schools, Edwardsville, Treharris	Merthyr Tydfil School Board	J. L. Smith, Architect, Aberdare	do.
Road Works, Vicarage-road	Ware (Herts) U.D.C.	J. E. Smales, Surveyor, New-road, Ware	do.
Business Premises, Pengam, Wales	.....	Mr. Davies, Gellihaf, Maesycwmmer	do.
Rebuilding 59, High-street, Merthyr	.....	C. M. Davies, 112, High-street, Merthyr	do.
Sewerage Works, West Wylam, Northumberland	Hexham R.D.C.	J. E. Parker, Engineer, Post Office Chambers, Newcastle-on-Tyne	do.
Granite (300 tons)	Rickmansworth U.D.C.	The Surveyor, Town Hall, Rickmansworth	do.
Pulling down Houses, Upper St. John-street	Lichfield Corporation	E. Brooke, City Surveyor, Stowe-steet Depot, Lichfield	Nov. 27
Generating Station and Tramcar Shed	Kilmarnock Town Council	R. Blackwood, Burgh Surveyor, Market Bridge, Kilmarnock	do.
Additions to Workhouse, Bagthorpe	Nottingham Guardians	G. M. Howard, Workhouse, Bagthorpe	do.
Road Metal, Elgin, N.B.	.....	A. Hogg, Surveyor, 24, Academy-street, Elgin	do.
Erection of Public Buildings	Waltham Holy Cross U.D.C.	Council's Surveyor, Highbridge-street, Waltham Abbey	do.
Purifier House (Contract No. 1)	Knaresborough U.D.C.	J. E. Walker, Town Hall, Knaresborough	Nov. 28
Street Works, Saints-road and others	St. Anne's-on-Sea (Lancs) U.D.C.	Thos. Bradley, Council Offices, St. Anne's-on-Sea	do.
Heating Mission Church, Toronto, Bishop Auckland	.....	Hicks & Charlewood, Archs., 67, Westgate-road, Newcastle-on-Tyne	do.
Hotel, Merthyr Vale	.....	T. Roderick, Architect, Merthyr Tydfil	do.
Thirty-one Cottages, &c.	.....	do.	do.
Additions to Hospital, Ipswich	.....	J. S. Corder, Architect, Wimborne House, Ipswich	Nov. 30
Business Premises	Radcliffe Co-operative Soc., Ld.	J. G. Crone, Architect, 26, Colth Market, Newcastle-on-Tyne	do.
Waiting Room, &c.	King's Norton U.D.C.	A. W. Cross, Surveyor, 23, Valentine-rd., King's Heath, nr. Brmhm.	do.
Destructor Buildings, &c., New Ing Fields	Batley Town Council	Borough Surveyor, Branch-road, Batley	do.
Road Works, Davies-avenue, Roundhay	Leeds R.D.C.	E. J. Silcock, Civil Engineer, 10, Park-row, Leeds	do.
Water Supply Works	Brandon (Suffolk) R.D.C.	H. Walker & Son, Civil Engineer, King-street, Nottingham	do.
C. I. Pipes, Thornton, near Poulton-le-Fylde, Lancs	.....	A. Hindle, Civil Engineer, 44, Abingdon-street, Blackpool	do.
Road Works, &c. Old Park-road	Leeds R.D.C.	E. J. Silcock, Engineer, 10, Park-row, Leeds	do.
Sewerage Works, &c. Poulton-le-Fylde	Thornton &c. Corporation	A. Hindle, Civil Engineer, 44, Abingdon-street, Blackpool	do.
Alterations to Premises, Commercial-road, Halifax	Royal Insurance Co's Offices	T. Kershaw, Architect, 1, York Bank Chambers, Halifax	do.
Gymnasium at County School, Bethal-road, Carnarvon	Local Government Body	R. L. Jones, County Architect, 14, Market-street, Carvarvon	do.
Retaining Wall along Shore-road	Swanage U.D.C.	Council's Surveyor, Town Hall, Swanage	do.
Alterations to House, Heworth, Durham	Felling Education Committee	H. Miller, Architect, Council Buildings, Felling	Dec. 1
Outfit of Sybourn-street Temporary School, Leyton	Leyton District Council	W. Jacques, Architect, 2, Fen-court, E.C.	do.
Lodge, Coachhouse, &c., Carnagarve, Moville, Ireland	Major Evans	R. H. Nolan & Co., Carlisle-road, Londonderry	do.
250 Cubic Yards of Blue Guernsey Granite	Brentford U.D.C.	Council's Surveyor, Clifden House, Boston-road, Brentford	do.
Painting, &c., Works, Crossness Outfall Works	London County Council	Engineer's Department, County Hall, Spring-gardens, S.W.	do.
Central Free Library	Borough of Hammersmith	H. F. Hone F.R.I.B.A., 13, Hart-street, Bloomsbury, W.C.	Dec.
Electrical Plant at Power Station, Southwick	Brighton Town Council	A. Wright, Engineer, Moorgate-street, E.C.	Dec.
Two Relief Stations	Croydon Union	Wills & Anderson, 4, Adam-street, Adelphi, W.C.	do.
Sewers, &c., Wonersh	Hambledon (Surrey) R.D.C.	E. L. Lunn, Surveyor, 36, High street, Guildford	Dec.
Alterations, &c., at Isolation Hospital, near Hertford	Hertford & Ware Jnt. Hospl. Brd.	W. L. Grant, Architect, Sittingbourne	Dec. 11
Coast Guard Station at Littlehampton	Admiralty	Superintending Engineer, H.M. Dockyard, Portsmouth	do.
New Coastguard Station at Queenborough	The Admiralty	Director of Works Department, 21, Northumberland-avenue, W.C.	do.
Internal Fittings, New University Buildings	Birmingham University	Aston Webb & Ingress Bell, 19, Queen Anne's-gate, S.W.	Dec. 14
Electrical Wiring Fittings, &c.	West Ham Education Committee	W. Jacques, A.R.I.B.A., 2, Fen Court, Fenchurch-street, E.C.	do.
Galvanised Iron Portable Dust-bins, &c.	do.	do.	do.
Construction of a New River Wall, &c.	H.M. Works and Public Buildings	H.M. Office of Works, Storey's Gate, S.W.	Dec. 15
Alterations to Centre Tower of Rochester Cathedral	.....	C. H. Fowler, Architect, The College, Durham	No date.
Printing Works, &c., Stanley, Durham	Mr. T. J. Jackson	T. E. Crossling, Architect, Front-street, Stanley	do.
Refronting Shop, 6, Cheapside, Kendal	Mr. C. Heap	J. Stalker, Architect, Kendal	do.
Banking Premises and Houses, Boston, Spa	York City & County Bnkg. Co., Ld.	Danby & Simpson, Architects, 10, Park-row, Leeds	do.
Church, Cheadle Heath, Stockport	Methodist New Connexion	J. Wills & Sons, Architects, Victoria Chambers, Derby	do.
Electricity Sub-station, Hipperholme	Halifax Corporation	James Lord, Civil and Borough Engineer, Halifax	do.
Nautical School, Portishead	Training Ship "Formidable"	E. Gabriel, Architect, 42, Old Broad-street, E.C.	do.

PUBLIC APPOINTMENTS.

Nature of Appointment.	By whom Advertised.	Salary.	Applications to be in
Clerk of Works	Hipperholme U.D.C.	2*l*. 5s. per week	Nov. 24
Foreman Pipelayers	Corporation of Bloemfontein	30*l*. per month	Nov. 25
Engineer	Rhyl U.D.C.	3*l*. 3s. per week	do.
Clerk of Works	Parish of Willesden	3*l*. 3s. per week	do.
Main Road Surveyor	East Sussex County Council	150*l*.	Nov. 27
Borough Electrical Engineer	Poplar Borough Council	400*l*.	Nov. 28
Highways' Surveyor	Romsey (Hants) R.D.C.	120*l*.	Dec. 5

Those marked with an asterisk (*) are advertised in this Number. *Competition*, iv. *Contracts*, iv. vi. viii. & x. *Public Appointments*, xvii

PRICES CURRENT (*continued*).

LEAD, &c.

	Per ton, in London. £ s. d.		£ s. d.
LEAD—Sheet, English, 3 lbs. and up	14 0 0	...	—
Pipe in coils	14 10 0	...	—
Soil pipe	17 0 0	...	—
Compo Pipe	17 0 0	...	—
ZINC—Sheet—			
Vieille Montagne ton	26 0 0	...	—
Silesian	25 15 0	...	—
COPPER—			
Strong Sheet per lb.	0 0 10½	...	—
Thin „	0 0 11½	...	—
Copper nails „	0 0 11	...	—
BRASS—			
Strong Sheet per lb.	0 0 10	...	—
Thin „	0 0 11	...	—
TIN—English Ingots „	0 1 4	...	—
SOLDER—Plumbers' „	0 0 6	...	—
Tinmen's „	0 0 8	...	—
Blowpipe „	0 0 9	...	—

ENGLISH SHEET GLASS IN CRATES.

15 oz. thirds	2½d. per ft. delivered
„ fourths	1½d. „ „
21 oz. thirds	3d. „ „
„ fourths	2½d. „ „
26 oz. thirds	3½d. „ „
„ fourths	3½d. „ „
32 oz. thirds	4½d. „ „
„ fourths	4½d. „ „
Fluted sheet, 15 oz.	2½d. „ „
„ 21 oz.	3½d. „ „
½ Hartley's Rolled Plate	1½d. „ „
¾ „ „ „	2d. „ „
1 „ „ „	2½d. „ „

OILS, &c.

	£ s. d.
Raw Linseed Oil in pipes or barrels... per gallon	0 1 9
„ „ „ in drums	0 2 1
Boiled „ „ in pipes or barrels... „	0 2 0
„ „ „ in drums „	0 2 4
Turpentine, in barrels „	0 3 8
„ in drums „	0 3 10
Genuine Ground English White Lead per ton	19 0 0
Red Lead, Dry „	19 0 0
Best Linseed Oil Putty per cwt.	0 8 0
Stockholm Tar per barrel	1 12 0

VARNISHES, &c.

	Per gallon. £ s. d.
Fine Pale Oak Varnish	0 8 0
Pale Copal Oak	0 10 6
Superfine Pale Elastic Oak	0 12 6
Fine Extra Hard Church Oak	0 10 0
Superfine Hard-drying Oak, for seats of Churches	0 14 0
Fine Elastic Carriage	0 12 6
Superfine Pale Elastic Carriage	0 16 0
Fine Pale Maple	0 16 0
Finest Pale Durable Copal	0 18 0
Extra Pale French Oil	1 1 0
Eggshell Flatting Varnish	0 18 0
White Copal Enamel	1 4 0
Extra Pale Paper	0 12 0
Best Japan Gold Size	0 10 6
Best Black Japan	0 16 0
Oak and Mahogany Stain	0 9 0
Brunswick Black	0 8 6
Berlin Black	0 16 0
Knotting	0 10 0
French and Brush Polish	0 10 0

TERMS OF SUBSCRIPTION.

"THE BUILDER" (Published Weekly) is supplied DIRECT from the Office to residents in any part of the United Kingdom, at the rate of 19s. per annum (52 numbers) PREPAID. To all parts of Europe, America, Australia, New Zealand, India, China, Ceylon &c., 26s. per annum. Remittances (payable to J. MORGAN) should be addressed to the publisher of "THE BUILDER, Catherine-street, W.C.

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TO CORRESPONDENTS.

"OZONE" (The idea is not new, and has been adopted to some extent in the United States. We may have more to say on the subject).—R. E. (Below our limit).—W. L. and G. E. W. (Amounts should have been stated).

NOTE.—The responsibility of signed articles, letters, and papers read at meetings rests, of course, with the authors.

We cannot undertake to return rejected communications.

Letters or communications (beyond mere news items) which have been duplicated for other journals are NOT DESIRED.

All communications must be authenticated by the name and address of the sender, whether for publication or not. No notice can be taken of anonymous communications.

We are compelled to decline pointing out books and giving addresses.

Any commission to a contributor to write an article, or to execute or lend a drawing for publication, is given subject to the approval of the article or drawing, when received, by the Editor, who retains the right to reject it if unsatisfactory. The receipt by the author of a proof of an article in type does not necessarily imply its acceptance.

All communications regarding literary and artistic matters should be addressed to THE EDITOR; those relating to advertisements and other exclusively business matters should be addressed to THE PUBLISHER, and *not* to the Editor.

TENDERS.

Communications for insertion under this heading should be addressed to "The Editor," and must reach us *not later than* 10 *a.m. on Thursdays*. [N.B.—We cannot publish Tenders unless authenticated either by the architect or the building-owner; and we cannot publish announcements of Tenders accepted unless the amount of the Tender is given, nor any list in which the lowest Tender is under 100*l.*, unless in some exceptional cases and for special reasons.]

* Denotes *accepted*. † Denotes *provisionally accepted*.

BRIDLINGTON.—For the erection of five cottages and alterations to two others, North Back-lane, for Mr. E. H. Rudd. Mr. A. T. Martindale, architect, 66, Wellington-road, Bridlington :—

J. Stork	£930 0 0	Smallwood & Shaw	£821 2 6
J. H. Hudson	892 10 0	F. Kneeshaw	820 0 0
J. Rennard	888 15 0	H. Hoggard	788 5 0
E. Wilson	835 10 0	J. Sawdon	773 0 0
F. Flintoff	830 0 0	W. Barnes*	740 0 0

[All of Bridlington.]

BROADSTAIRS.—For additions to Bleak House, Broadstairs, for Mr. Thomas Barry. Mr. William A. Burr, architect, 65, Chancery-lane, W.C. :—

New Boiler House, &c.—J. May, Broadstairs* £160 10
Hot Water Work.—Keith & Blackman Co., Ltd.* 100 0
Greenhouses.—Pearce & Co., Holloway* 146 0

DARENTH.—For providing and fixing new sanitary fittings in the children's department, and for renewing and repairing the corridor floor in both the adults' and children's departments, at the Darenth Asylum, for the Metropolitan Asylums Board :—

Munn & Son	£16,380 0 0	Enness Bros.	£7,179 0 0
M. Batchelor	11,285 0 0	A. H. Inns, Bishopsgate, E.C. (less £246 2s. 8d. for agreed variations and omissions)*	7,039 0 0
Gardner & Hazell	10,561 0 0		
Vigor & Co.	10,440 0 0		
Hayes & Co.	10,266 15 2		
J. Lonsdale	9,240 0 0		
Doulton & Co.	9,080 0 0		
Titmas & Sons	7,621 0 0		
Thomas Cole	7,335 0 0		

[Engineer's estimate, £6,700.]

ENNISKILLEN.—For the erection of cells at the Court House for the Fermanagh County Council :—

J. Bloomfield, jun.	£265 0	James Donelly	£254 10
Hynes & Son	258 14	James Traynor	239 10
B. Hughes	264 10		

EWELL.—For the erection of the laundry, mortuary, &c., buildings at the Epileptic Colony, Ewell, for the London County Council :—

Enness Bros., Erith* £1,643

HANLEY (Staffs).—Accepted for the execution of building works, for the Hanley, Stoke, and Fenton Joint Hospital Board. Mr. Elijah Jones, architect, Albion-street, Hanley :—

Buildings.—John Bagnall, Fenton, Stoke-on-Trent £5,816 0 0
Lancashire Boiler and Appliances.—William Hill, Ltd., Fenton, Stoke-on-Trent 500 0 0
Cooking Apparatus.—Summerscales & Sons, Ltd., Keighley, Yorks. 294 12 6
Electric Lighting.—G. A. Steenthal, Cooper-street, Manchester 484 15 6
Furniture.—W. S. Sherratt, Burslem, Stoke-on-Trent 260 0 0
Drapery.—Geo. Fleet & Co., Stoke-on-Trent, 175 5 10½
Ironmongery.—J. C. Schoefield, Hanley 70 1 9
Bedsteads.—J. C. Schoefield, Hanley 65 17 10
Crockery.—Geo. Fleet & Co., Stoke-on-Trent 8 5 0
Painting.—Birchall & Son, Hanley 330 0 0

HARTLEPOOL.—For the execution of street works, Rokeby and other streets, for the Corporation. Mr. H. C. Crummack, C.E., Borough Buildings, Hartlepool :—

Contracts 1, 2, 3, 6 and 8.
J. T. Short, Stranton Green, West Hartlepool,* £2,584 2
Contracts 4, 5 and 7.
George Pickering, Thornton-street, West Hartlepool* £353 6

HASTINGS.—The supply of granite kerb for the Corporation. Mr. P. H. Palmer, C.E., Town Hall, Hastings :—

Goodchild & Co., 49, Fenchurch-st., London, E.C., * 1s. 2¾d. per foot.

HOLYHEAD.—For the erection of a chimney shaft at electricity works, for the Urban District Council. Mr. Price F. White, engineer, Electricity Works, Bangor, N. Wales :—

The Alphons Custodis Chimney Construction Co., Ltd., 119, Victoria-street, S.W.,* £617.

IPSWICH.—For extension of the water main, &c., at Borough Asylum, for the Corporation. Mr. E. Buckham, Engineer and Borough Surveyor, Town Hall, Ipswich :—

Stearn & Son	£238 0	F. H. Orvis, Bishops Hill, Ipswich*	£197 10
Crisp & Smith	205 0		

IPSWICH.—For the erection of a public convenience, Alexandra Park, for the Corporation. Mr. E. Buckham, Borough Surveyor, Town Hall, Ipswich :—

W. Grayston	£357 10	C. A. Green	£280 0
W. H. Death	330 0	G. Burgoyne	264 6
S. A. Kenny	320 0	S. Skerritt, Woodbridge-road, Ipswich*	241 0
A. Sadler	320 0		
Grimwood & Sons	307 0		
C. Borrett	300 0		

LEAVESDEN.—For alterations to the windows of Leavesden Asylum, for the Metropolitan Asylums Board :—

Hill & Co.	£1,560 0 0
Spencer & Co.	1,220 0 0
Mary Pearson	1,175 0 0
Howard & Co.	968 0 0
Iles, Ltd.	887 10 0
H. Martin	810 0 0
J. P. White	782 0 0
Gardner & Hazell	763 0 0
J. S. Kimberley	744 10 0
Moss & Sons, Ltd.	695 15 11
G. & J. Waterman	664 0 0
W. Sampson	660 10 0
The Parkstone Steam Joinery Co.	650 0 0
King & Co.	597 10 0
T. Robinson	598 9 0
Enness Bros.	566 0 0
E. Chamberlain	500 0 0
George Wigas, 90 and 92, St. Alban's-road, Watford*	463 0 0

[The Engineer to the Board's estimate was £550.]

LEEDS.—For laying water-main (2 miles in length) Wortley to Beeston, for the Corporation :—

Young & Co., Wakefield* £598 0 6

LONDON.—For the reconstruction of slipper-baths, &c., at the Marshall-street Baths, for the Westminster City Council :—

Stubbs, Alexander, Ltd.	£5,977	Sabey & Son	£4,600
Harding & Son	5,900	Hall, Beddall, & Co.	4,420
Patman & Fotheringham, Ltd.	4,753	Ferguson & Co.	4,259
Davis & Bennett	4,600	B. E. Nightingale	4,057
		Doulton & Co., Ltd.*	3,980

Extension of Electric Lighting.

Slatter & Co.	£273 10	Laing, Wharton, & Co.	£237 12
Bolding & Sons, Ltd.	256 6	A. H. Wood*	228 0

LONDON.—For the completion of the boundary-wall at the Grove Hospital, for the Metropolitan Asylums Board :—

Cropley Bros.	£498	Coleman & Co.	£406
A. C. Soan	490	Enness Bros.	357
Gardner & Hazell	477	E. Wall	350
H. Kent	416	T. Cole, Barnsbury, N.*	323

[Engineer's revised estimate, £335.]

LONDON.—For alterations, &c., to bakehouses under the Factory Act, 1901. Mr. Jas. W. Hall, surveyor, 13, Priory-park-road :—

325, *Kilburn-lane, N.W., for Mr. C. Moxham.*

E. Hall	£206	C. Godson	£116
J. Huish	142	F. Hilborn	112

12, *Malvern-road, W. Kilburn, N.W., for Mr. Hargesheimer.*

F. Hilborn* £122 10

12, *Canterbury-road, Kilburn, N.W., for Mr. L. Schmitz.*

F. Hilborn	£196	A. Balfour	£182
G. Heal	189		

LONDON.—For alterations at 190 and 192, Edgware-road, W., under the Factories and Workshop Act, 1901, for Mr. W. Straker. Mr. H. Gardiner Gribble, architect, Woking :—

Johnson & Son	£890	Pitcher & Son	£670
C. Horton	707	Sims & Woods*	600

LONDON.—For the construction of three underground conveniences, for the Tottenham Urban District Council. Mr. W. H. Prescott, C.E., Combes Croft House, 712, High-road, Tottenham, N. :—

Rowley Bros., West Green, S. Tottenham* £5,262

NEWHAVEN.—For the erection of Post Office buildings. Mr. F. J. Rayner, architect, Fort-road, Newhaven :—

Peerless Dennis & Co.	£1,264 0	Miller & Selmes	£1,000 9
C. S. Jenks	1,166 0	M. Woolger	875 0
		C. Cooke, Newhaven*	832 13

NEWHAVEN.—For alterations to Primitive Methodis Chapel. Mr. F. J. Rayner, architect, Fort-road, Newhaven :—

C. S. Jenks	£945 0	M. Woolger, Newhaven*	£808 0
J. G. Pickard	910 0	C. Ccoke	792 15

PANTYWYLL (Wales).—For rebuilding the Castle Inn, for Messrs. Giles & Harrup, the Brewery, Merthyr Tydfil, Mr. C. M. Davies, architect, 12, High-street, Merthyr :—

J. Jenkins	£1,630 10	John Williams	£1,389 10
S. Hawkins	1,530 0	T. Jones, Walter-street, Dowlais*	1,247 10
E. Sullivan	1,480 0		
M. Warlow	1,394 10		

PINNER (Middlesex).—For the restoration of cemetery chapels, and erection of a mortuary building, for the Burial Board. Messrs. Harrison & Ward, architects, 66, Victoria-street, Westminster, S.W. Quantities by Messrs. Ruault & Young, London :—

	A.	B.
Bate Bros.	£668	£384
G. & J. Waterman	479	290
Goodchild & Jefferys	457	284
J. Rackham	369	258
W. J. Page	375	232
J. Darvill, Watford*	315	220

[*See also next page.*

PONTYGWAITH (Wales).—For additions to working men's Institute:—
W. D. Humphries, carpenter, Florotown,* £670.

PORTLAND.—For the erection of a stone wall, bandstand foundation, &c., Easton-square, for the Urban District Council. Mr. R. Stevenson Henshaw, Engineer, Council Offices, New-road, Portland. Quantities by Engineer:—

J. Conway	£826 6 8	F. J. Barnes.	
Wakeham Bros.	673 10 0	Portland*	£645 0 0

ROCHDALE.—For the erection of the first portion of the Church of the Good Shepherd. Mr. E. H. Lingen Barker, architect, Hereford:—

Hatch & Son	£3,784	G. F. Endersby	£2,905
Ashworth & Wolfenden	3,190	Nicholl & Son	2,942
G. F. Halliday	3,050	T. Pickles, Luddenden Foot*	2 620
W. Hopkins	2,999	G. H. Eastwood	2,615

ST. ANDREWS (N.B.).—For macadamising, &c., Market-street, for the Town Council. Mr. Wm. Watson, Burgh Surveyor, Town Hall, St. Andrews. Quantities by Burgh Surveyor:—

D. B. Shaw	£554 3 6	Wm. Wilson	£444 17 4
Robert Taylor	510 10 1	Laing & Co.	402 3 3
Martin & Macfarlane	502 12 9	Strachan & Son	383 13 9
		T. S. Dick, Broty Ferry*	360 11 2

SLIGO.—For the erection of a labourer's cottage, Drumcoolumb, for the Rural District Council. Mr. A. T. Heron, B. E. Union, Ballisodare, Co. Sligo:—
Jno. Anderson, Ross Riverstoun, Co. Sligo...£102

STREET (Somerset).—For the construction of a reservoir (150,000 gallons), for the Urban District Council. Mr. A. P. I. Cotterell, C.E., 28, Baldwin-street, Bristol:—

D. Dunthorne	£1,278 10 0	S. Ambrose	£1,190 0 0
J. Hatherley	1,257 10 0	Huish, Street, Somerset*	973 4 11
Wright & Son	1,240 0 0		
Wills & Son	1,220 0 0		

WALLINGFORD.—For Wallingford and Crowmarch Joint Hospital Board. Mr. Sam'l Couch-Jones, architect and surveyor, Land Chambers, Friar-street, Reading:—
Contract No. 1—Administration block only.

Hughes	£1,290 0	Bosher & Son	£1,093 10
Brasher & Son Wallingford*	1,180 0	Gibson & Son	1,078 0

[Architect's estimate, £1,160.]

Contract No 2—Drainage, &c.

Hughes	£450	Bosher & Son	£345
Gibson & Son	420	Brasher & Son, Wallingford*	312
Osenton	377		

[Architect's estimate, £350.]

WEASENHAM.—For alterations and additions to Weasenham Hall, Norfolk, for the Right Hon. the Earl of Leicester, K.G. Mr. C. Smedley Beck, architect, Norwich. Quantities by Mr. A. J. Chambers, Norwich:—

R. Dye	£11,435	Mussell White & Sapp	£10,670
Smith & Son	11,065	Hawes & Sons, Norwich*	9,999
G. Riches	10,795		
Youngs & Son	10,780		
W. H. Brown	10,759		

WOODFORD (Essex).—For sewerage contracts, for Woodford Urban District Council. Mr. W. Farrington, C.E., Council Offices, Woodford Green. Quantities by Messrs. Rider, Hunt, & Co., 181, Queen Victoria-street, E.C.:—

	Contract No. 1. £ s. d.	Contract No. 2. £ s. d.
T. Adams	9544 9 0	18,498 1 11
G. J. Anderson	8,952 10 1	13,545 6 2
Arnold & Sons	9,440 0 0	16,648 0 0
George Bell	8,653 0 0	14,010 0 0
J. & T. Binns	9,223 0 3	16,568 13 7
Cooke & Co.	8,934 0 0	16 560 0 0
Coxhead & Co.	8,685 0 0	14,142 0 0
J. T. Dawson	9,953 15 0	15,697 6 6
Freeman & Son	8,545 13 1	13,776 1 2
W. & C. French	10,026 14 7	18,814 16 10
Hodson & Sons, Nottingham	*8,042 1 0	15,510 19 4
John Jackson	9,086 5 0	20,713 2 9
Joseph Jackson	9,289 10 6	—
Johnson & Langley	8,553 9 0	15,889 13 6
Killingback & Co.	10,116 5 7	18,798 10 6
M. S. Kitteringham	11,693 0 0	19,668 17 4
W. Manders	8,247 0 0	13,989 0 0
Moss & Sons, Loughborough	8,408 14 2	*13,055 9 5
Roger & Co.	10,754 0 0	18,713 0 0

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